STIC Search Report
EIC 1700

USPTO

STIC Database Tracking Number: 115664

TO: Gregg Cantelmo
Location: 6B71
Art Unit : 1745
March 3, 2004

Case Serial Number: 10/099711

From: Michael Newell
Location: EIC 1700
REMSEN 4A30
Phone: 571/272-2538
Michael.Newell@uspto.gov

Search Notes

I included quite a few references here. If you see a direction you'd like to narrow the search, I should be able to do so in the next day or two.

MN

sira
Search and Information Resources Administration

STIC Search Results Feedback Form

EIC17000

Questions about the scope or the results of the search? Contact ***the EIC searcher or contact:***

Kathleen Fuller, EIC 1700 Team Leader
571/272-2505 REMSEN 4B28

Voluntary Results Feedback Form

- *I am an examiner in Workgroup:* ☐ *Example: 1713*
- *Relevant prior art **found**, search results used as follows:*
  - ☐ 102 rejection
  - ☐ 103 rejection
  - ☐ Cited as being of interest.
  - ☐ Helped examiner better understand the invention.
  - ☐ Helped examiner better understand the state of the art in their technology.

Types of relevant prior art found:

- ☐ Foreign Patent(s)
- ☐ Non-Patent Literature
  (journal articles, conference proceedings, new product announcements etc.)

- *Relevant prior art **not found:***
  - ☐ Results verified the lack of relevant prior art (helped determine patentability).
  - ☐ Results were not useful in determining patentability or understanding the invention.

Comments:

Drop off or send completed forms to EIC1700 REMSEN 4B28

Access DB# 115669

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Gregg Cantelmo Examiner #: 75777 Date: 3/1/04
Art Unit: 1745 Phone Number 30 272 1283 Serial Number: 10/099711
Mail Box and Bldg/Room Location: REM 6B71 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: SEE ATTACHED

Inventors (please provide full names): " "

Earliest Priority Filing Date: 3/14/02

***For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.**

See attached claims

Metal Air		sheet	envelope	receptacle
Zinc or Air		liner	case	etc.
Aluminum or Air		lining	casing	
Lithium or Air		bag	housing	
Magnesium or Air		sack	box	
		sac	container	
		pouch	chamber	

Don't include fold in search

****

STAFF USE ONLY

Searcher: Mike Newell
Searcher Phone #: 571-272-2538
Searcher Location: Rem 4A30
Date Searcher Picked Up: 3/3/04
Date Completed: 3/3/04
Searcher Prep & Review Time: 60
Clerical Prep Time: _____
Online Time: 70

Type of Search

NA Sequence (#) _____
AA Sequence (#) _____
Structure (#) _____
Bibliographic ✓
Litigation _____
Fulltext _____
Patent Family _____
Other _____

Vendors and cost where applicable

STN 451.13
Dialog _____
Questel/Orbit _____
Dr.Link _____
Lexis/Nexis _____
Sequence Systems _____
WWW/Internet _____
Other (specify) _____

PTO-1590 (8-01)

```
     FILE 'CAPLUS' ENTERED AT 11:58:11 ON 03 MAR 2004
                E SCHRIM Y?/AU
                E BOGDANOVSKY ?/AU
L1            3 S E15 OR E16
                E ROSENBERG J?/AU
L2           24 S E7 OR E8 OR E9 OR E10
L3            1 S L1 AND L2

=> d l3 1 all

L3   ANSWER 1 OF 1  CAPLUS  COPYRIGHT 2004 ACS on STN
AN   2003:735892  CAPLUS
ED   Entered STN:  19 Sep 2003
TI   Battery pack holder for metal-air battery cells
IN   Shrim,  Yaron; Bogdanovsky,  Victor; Rosenberg,
     Jacob
PA   Electric Fuel Ltd., Israel
SO   U.S. Pat. Appl. Publ.
     CODEN: USXXCO
DT   Patent
LA   English
IC   ICM  H01M002-10
     ICS  H01M002-12; H01M012-06
NCL  429096000; 429082000; 429027000; 029623100
FAN.CNT 1
     PATENT NO.        KIND  DATE           APPLICATION NO.  DATE
     ---------------   ----  --------       ---------------  --------
PI   US 2003175584      A1   20030918       US 2002-99711    20020314
PRAI US 2002-99711           20020314
AB   The battery cell holder securely holds a plurality of electrical
     cells in a battery pack.  The battery cell holder comprises at least
     two separate types of layers that are bound to each other to form
     opposing faces.  The first layer is made of a material that absorbs
     aqueous solutions, particularly liquid electrolyte solutions used in
     metal-air cells, and preferably contacts an outward facing portion
     of each battery cell in the battery pack.  This material acts to
     limit the spread of leaking electrolyte solution so that the
     electrolyte solution cannot spread to other cells and cause
     electrical short circuits between the cells in the battery pack.
     The second layer is made of a material that is light, flexible,
     inexpensive, electrically non-conductive and impermeable to liquids.
     The latter prevents seepage of absorbed electrolyte from the casing.
     The holder may be made of inexpensive materials and avoid a need for
     complete encapsulation of the cells.
```

```
=> file hcaplus
FILE 'HCAPLUS' ENTERED AT 14:58:49 ON 03 MAR 2004
USE IS SUBJECT TO THE TERMS OF YOUR STN CUSTOMER AGREEMENT.
PLEASE SEE "HELP USAGETERMS" FOR DETAILS.
COPYRIGHT (C) 2004 AMERICAN CHEMICAL SOCIETY (ACS)
```



```
FILE COVERS 1907 - 3 Mar 2004  VOL 140 ISS 10
FILE LAST UPDATED: 2 Mar 2004  (20040302/ED)

 This file contains CAS Registry Numbers for easy and accurate
 substance identification.


=> d his full

     (FILE 'HOME' ENTERED AT 13:45:51 ON 03 MAR 2004)

     FILE 'HCAPLUS' ENTERED AT 13:45:59 ON 03 MAR 2004
L1        186255 SEA BATTERY OR BATTERIES OR (PRIMARY OR SECONDARY OR
                 ELECTROCHEM? OR ELECTRICAL OR FUEL)(2A)(CELL OR CELLS)
L2         12759 SEA (METAL OR ZINC OR ZN OR ALUMINUM OR AL OR LITHIUM OR
                 LI OR MAGNESIUM OR MG)(2A)(AIR)
L3          1696 S L1 (4A)L2
L4       2014698 SEA HOLDER OR SHEET# OR LINER# OR LINING# OR BAG# OR
                 SAC# OR SACK# OR POUCH? OR ENVELOP? OR CASE OR CASES OR
                 CASING? OR HOUSE? OR HOUSING? OR BOX OR BOXES OR TRAY OR
                 TRAYS OR CONTAINER# OR CHAMBER# OR RECEPTACLE# OR ENCAS?
                 OR ENCAPSULAT? OR PACKAG?
L5       1448368 SEA LAYER OR LAYERS OR MULTIPLE(W)LAYER? OR MULTILAYER?
                 OR MULTI(W)LAYER? OR LAMINAT?
L6        131040 SEA SEEP OR SEEPS OR SEEPING OR SEEPAGE? OR LEAK OR
                 LEAKS OR LEAKING OR LEAKAGE? OR WETTING
L7          4269 SEA ABSORB? (5A) (FELT OR SPONGE# OR CLOTH# OR PAPER OR
                 CARDBOARD)
L8          4809 SEA (IMPERMEABLE OR IMPERMABILITY OR MOISTUREPROOF OR
                 MOISTURE(W)PROOF OR WATERPROOF? OR WATER(W)PROOF? OR
                 WATERRESISTAN? OR WATER(W)RESISTAN?)(5A)(PLASTIC OR
```

```
                THERMOPLASTIC OR POLYETHYLENE OR POLYPROPYLENE OR
                POLYSTYRENE)
L9          436 SEA L3 AND L4
L10           3 SEA L9 AND HOLDER?
                D SCAN
L11         438 SEA BATTER?(2A)PACK#
L12           3 SEA L11 AND L9
L13           2 SEA L12 NOT L10
L14         127 SEA L9 AND L5
L15           3 SEA L7 AND L9
L16           2 SEA L8 AND L9
L17          10 SEA L10 OR L12 OR L15 OR L16
L18          61 SEA L9 AND L6
L19          59 SEA L18 NOT L17

     FILE 'WPIX' ENTERED AT 14:48:12 ON 03 MAR 2004
L20         802 SEA L1 (4A)L2
L21         310 SEA L20 AND L4
L22          57 SEA L21 AND L5
L23          44 SEA L21 AND L6
L24          90 SEA L22 OR L23
L25           3 SEA L24 AND (L7 OR L8)
                D SCAN
L26          42 SEA L23 NOT L25
L27           5 SEA L24 AND L11
L28           8 SEA L27 OR L25
L29          40 SEA L26 NOT L28

     FILE 'JAPIO' ENTERED AT 14:56:39 ON 03 MAR 2004
L30         168 SEA L1(3A)L2
L31          25 SEA L30 (4A) L3

     FILE 'HCAPLUS' ENTERED AT 14:58:49 ON 03 MAR 2004


     FILE HOME

     FILE HCAPLUS
```

FILE COVERS 1907 - 3 Mar 2004 VOL 140 ISS 10
FILE LAST UPDATED: 2 Mar 2004 (20040302/ED)

This file contains CAS Registry Numbers for easy and accurate substance identification.

FILE WPIX
FILE LAST UPDATED: 2 MAR 2004 <20040302/UP>
MOST RECENT DERWENT UPDATE: 200415 <200415/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> FOR A COPY OF THE DERWENT WORLD PATENTS INDEX STN USER GUIDE, PLEASE VISIT:
http://www.stn-international.de/training_center/patents/stn_guide.p

>>> FOR DETAILS OF THE PATENTS COVERED IN CURRENT UPDATES, SEE http://thomsonderwent.com/coverage/latestupdates/ <<<

>>> FOR INFORMATION ON ALL DERWENT WORLD PATENTS INDEX USER GUIDES, PLEASE VISIT:
http://thomsonderwent.com/support/userguides/ <<<

>>> ADDITIONAL POLYMER INDEXING CODES WILL BE IMPLEMENTED FROM DERWENT UPDATE 200403.
THE TIME RANGE CODE WILL ALSO CHANGE FROM 018 TO 2004.
SDIS USING THE TIME RANGE CODE WILL NEED TO BE UPDATED.
FOR FURTHER DETAILS: http://thomsonderwent.com/chem/polymers/ <<

FILE JAPIO
FILE LAST UPDATED: 1 MAR 2004 <20040301/UP>
FILE COVERS APR 1973 TO OCTOBER 31, 2003

<<< GRAPHIC IMAGES AVAILABLE >>>

=> d l17 1-10 cbib abs hitstr hitind

L17 ANSWER 1 OF 10 HCAPLUS COPYRIGHT 2004 ACS on STN
2003:735892 **Battery pack holder** for **metal-air battery** cells. Shrim, Yaron; Bogdanovsky, Victor; Rosenberg, Jacob (Electric Fuel Ltd., Israel). U.S. Pat. Appl. Publ. US 20030175584 A1 20030918 (English). CODEN: USXXCO. APPLICATION: US 2002-99711 20020314.
AB The battery cell **holder** securely holds a plurality of electrical cells in a **battery pack**. The battery

cell **holder** comprises at least two separate types of layers that are bound to each other to form opposing faces. The first layer is made of a material that absorbs aqueous solutions, particularly liquid electrolyte solutions used in metal-air cells, and preferably contacts an outward facing portion of each battery cell in the **battery pack.** This material acts to limit the spread of leaking electrolyte solution so that the electrolyte solution cannot spread to other cells and cause electrical short circuits between the cells in the **battery pack.** The second layer is made of a material that is light, flexible, inexpensive, electrically non-conductive and impermeable to liquids. The latter prevents seepage of absorbed electrolyte from the **casing.** The **holder** may be made of inexpensive materials and avoid a need for complete **encapsulation** of the cells.

IC ICM H01M002-10
ICS H01M002-12; H01M012-06

NCL 429096000; 429082000; 429027000; 029623100

L17 ANSWER 2 OF 10 HCAPLUS COPYRIGHT 2004 ACS on STN

2002:476965 Document No. 137:22347 Reserve primary **metal air battery.** Seropyan, G. V.; Nikol'skii, I. A. (Russia). Russ. RU 2168246 C1 20010527, No pp. given (Russian). CODEN: RUXXE7. APPLICATION: RU 2000-114858 20000613.

AB The battery contains a **housing** accommodating an anode, a cathode, an electrolyte compartment, and a reset mechanism. The anode is made of electrochem. active metal selected from a group contg. Al, Mg, Zn, and their alloys. The cathode is a gas-diffusion air electrode. An electrolyte compartment is located between a rear side of the anode and the **housing** wall. The reset mechanism is made in the form of an anode provided with a device for its displacement in parallel with a cathode plane along an axis perpendicular to the cathode plane. The anode is secured through its rear side to a **holder** and mounted in parallel with the cathode in a spaced relation to **housing** side walls. The side walls of the **housing** are provided with guides for anode displacement. The anode **holder** has a sealing arrangement in the form of an adhesive layer or a sealing gasket on surface adjacent to the **housing** side walls. An anode displacement device is made in the form of screw-and-nut assembly with its nut placed on the anode **holder** and screw, on **case** wall. The screw is provided with sealing gaskets installed in vicinity of the **holder** and **housing** wall. The air electrode is covered with shielding grid that also functions as a current lead. The battery has enhanced specific power characteristics.

IC ICM H01M006-32
ICS H01M012-04

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST reserve primary **metal air battery**
IT Primary **batteries**
(reserve; reserve primary **metal-air battery**)
IT Aluminum alloy, base
Magnesium alloy, base
Zinc alloy, base
(anode for reserve primary **metal-air battery**)
IT 7429-90-5, Aluminum, uses 7439-95-4, Magnesium, uses 7440-66-6, Zinc, uses
(anode for reserve primary **metal-air battery**)

L17 ANSWER 3 OF 10 HCAPLUS COPYRIGHT 2004 ACS on STN
2000:421461 Document No. 133:46150 **Battery pack** design for **metal-air battery** cells.
Shrim, Yaron; Givon, Menachem; Dopp, Robert B.; Rosenberg, Tzvi (Electric Fuel Limited, Israel). PCT Int. Appl. WO 2000036691 A1 20000622, 94 pp. DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-US28434 19991201. PRIORITY: US 1998-PV112292 19981215; US 1999-PV119563 19990210; US 1999-PV119568 19990210; US 1999-293927 19990415; US 1999-PV135061 19990520.
AB A high capacity primary (single-use; non-rechargeable) **battery pack** for high current portable appliances such as cellular phones employs electrochem. cells that use ambient oxygen for one of the electrodes. The pack makes possible a simple low cost design by providing for oxygen supply in a completely passive yet compact configuration. To provide for compactness while providing the high gas exchange rates required of high current devices in a passive air management design, a variety of design tactics are developed and applied in various embodiments. Cells may be arranged inside a **housing** in a tightly packed arrangement by providing internal spaces that are sized to permit diffusion and, if possible, bulk air flow. The highest volumetric energy d. is achievable by permitting bulk flow of air into the **housing.** The free exchange of gases while preventing the entry of water into the area contg. the cells is addressed by **encapsulating** the cells in a water-impermeable material with a gas-permeable portion. In a preferred configuration, the cells

are arranged in **trays** and sealed in the **trays** with porous Teflon of the cell surfaces that exchange gases.

IC ICM H01M012-06
ICS H01M002-10

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery metal air pack** design

IT Primary **batteries**
(**battery pack** design for **metal-air battery** cells)

IT Fluoropolymers, uses
(**battery pack** design for **metal-air battery** cells)

IT Telephones
(mobile; **battery pack** design for **metal-air battery** cells)

IT 9002-84-0, Teflon
(**battery pack** design for **metal-air battery** cells)

IT 1310-58-3, Potassium hydroxide, uses
(gelled aq.; **battery pack** design for **metal-air battery** cells)

L17 ANSWER 4 OF 10 HCAPLUS COPYRIGHT 2004 ACS on STN

2000:415637 **Battery pack** design for **metal-air battery** cells. Shrim, Yaron; Givon, Menachem; Rosenberg, Tzvi; Dopp, Robert B. (Electric Fuel Limited, Israel). PCT Int. Appl. WO 2000036692 A1 20000622 DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-US28458 19991201. PRIORITY: US 1998-PV112292 19981215; US 1999-PV119563 19990210; US 1999-PV119568 19990210; US 1999-293927 19990415; US 1999-PV135061 19990520.

AB A high capacity primary (single-use; non-rechargeable) **battery pack** for high current portable appliances such as cellular phones employs electrochemical cells that use ambient oxygen for one of the electrodes. The pack makes possible a simple low cost design by providing for oxygen supply in a completely passive yet compact configuration. The invention provides for compactness while providing the high gas exchange rates required of high current devices in a passive air management design. Cells may be arranged inside a **housing** in a tightly packed

arrangement by providing internal spaces that are sized to permit diffusion and, if possible, bulk air flow. The highest volumetric energy density is achievable by permitting bulk flow of air into the **housing**. It has been found that in practical use, in applications such as cellular telephones, that bulk air flow can play a significant role in gas exchange required for operation.
IC ICM H01M012-06
ICS H01M002-10

L17 ANSWER 5 OF 10 HCAPLUS COPYRIGHT 2004 ACS on STN
1995:709056 Document No. 123:118590 Button air batteries having improved air diffusion paper or sealing paper. Hamada, Masaharu; Murakami, Kaoru; Ooo, Fumio (Matsushita Electric Ind Co Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 07130404 A2 19950519 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1993-270624 19931028.
AB The air diffusion paper in cathode **cases** having air holes contains substances absorbing or adsorbing H. In the sealing paper for blocking the holes, parts contacting to the holes consist of synthetic resin films filled with the substances, and the residual parts consist of gas barrier materials. Blistering and peeling of sealing paper due to H gas generation are prevented.
IC ICM H01M012-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Batteries, primary
(air; air batteries having air diffusion **paper** or sealing **paper** contg. substances **absorbing** or adsorbing hydrogen)
IT Alloys, uses
(hydrogen-**absorbing**; air batteries having air diffusion **paper** or sealing **paper** contg. substances **absorbing** or adsorbing hydrogen)
IT Plastics, film
(sealing paper components; air batteries having air diffusion **paper** or sealing **paper** contg. substances **absorbing** or adsorbing hydrogen)
IT Zirconium alloy, base
(hydrogen-**absorbing**; air batteries having air diffusion **paper** or sealing **paper** contg. substances **absorbing** or adsorbing hydrogen)
IT 1333-74-0, Hydrogen, processes
(air batteries having air diffusion **paper** or sealing **paper** contg. substances **absorbing** or adsorbing hydrogen)
IT 7440-66-6, **Zinc**, uses
(anode; **air batteries** having air diffusion **paper** or sealing **paper** contg. substances **absorbing** or adsorbing hydrogen)
IT 1301-96-8, Silver oxide (AgO) 1309-48-4, Magnesium oxide(MgO),

uses 1313-13-9, Manganese oxide (MnO2), uses 20667-12-3, Silver oxide (Ag2O)
(hydrogen-absorbing or adsorbing substances; air batteries having air diffusion **paper** or sealing **paper** contg. substances **absorbing** or adsorbing hydrogen)

L17 ANSWER 6 OF 10 HCAPLUS COPYRIGHT 2004 ACS on STN
1988:78724 Document No. 108:78724 Button-type air batteries. Konishi, Hajime; Morita, Korenobu; Mizutani, Seiichi; Sawai, Tadashi (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 62272478 A2 19871126 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-115253 19860520.
AB Button-type air batteries have a CO2-absorbing layer between the cathode **case** and the hydrophobic film of the cathode. The CO2-absorbing layer is a CO2 **absorbent**-filled woven or nonwoven **cloth**. Thus, a quicklime-based absorbent was filled in 0.1-mm-thick nonwoven Nylon **cloth** for use as the CO2-**absorbing** layers. Button-type air batteries using gelled Zn anodes and the CO2-absorbing layers had longer discharge time than batteries without the absorbing layers when discharged at 20° through a 6.2-kΩ load.
IC ICM H01M012-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT **Batteries**, primary
(button-type, **zinc-air**, with quicklime-base absorbent for carbon dioxide removal)

L17 ANSWER 7 OF 10 HCAPLUS COPYRIGHT 2004 ACS on STN
1983:37727 Document No. 98:37727 **Zinc-air battery**. Cerny Jaroslav (Czech.). Czech. CS 198501 B 19820801, 5 pp. (Czech). CODEN: CZXXA9. APPLICATION: CS 1977-4612 19770711.
AB A cylindrical alk. **Zn-air battery** of 190-230 A-h/kg capacity consists of a stainless steel **casing** with air openings, a catalyst layer of C **waterproofed** with **polystyrene**, a separator of nonwoven cloth of polyamide fibers, and a central column of a porous, absorbent material. The bottom and a part of the cell **casing** consist of an alkali-resistant (epoxy) resin. A Zn-starch-KOH gel fills the annular space between the separator and the central porous material.
IC H01M006-00
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **zinc air battery** alk cylindrical
IT **Batteries**, primary
(alk., **zinc-air**)

L17 ANSWER 8 OF 10 HCAPLUS COPYRIGHT 2004 ACS on STN
1975:534948 Document No. 83:134948 Anodes for alkaline batteries.

Tsuchida, Takashi; Shinoda, Kenichi; Yamamoto, Kohei; Murata, Tomoya (Fuji Electrochemical Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 50024733 19750317 Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1973-75455 19730704.

AB An alk. battery is prepd. by charging the anode compartment with 30-40% KOH, CM-cellulose [9004-32-4] powder (2-8 of the KOH soln., 1-8% of the anode-active material), and Na polyacrylate [9003-04-7] powder (2-7 of the KOH soln., 1-7% of the anode-active material) to give a gel-like anode material. These anode materials can be used with alk. batteries employing air O, Ag2O, HgO, or MnO2 cathodes and Zn or Fe anodes. Thus, a **Zn-air battery** was prepd. by pressing an O-ionizing catalyst on the exterior of a water repellent-treated, hollow C cyclinder, wrapping with **absorbent paper** and a separator, placing in a **case** serving as the anode, and filling the **case** with a mixt. of 35% KOH, 7% Zn amalgam [56457-72-8] 100, CM-cellulose 3, and Na polyacrylate 1-8 parts. The fabrication of the battery was completed in the conventional manner. At 20°, <55-75% humidity, and discharge across a 4-Ω resistance, only 2% of the batteries showed any leakage of the electrolyte after 2000 hr. In contrast, batteries prepd. with >40% KOH electrolyte and lesser amts. of CM-cellulose and Na polyacrylate showed a leakage rate of 24/100, 78/100, and 100/100 after 500, 1600, and 2000 hr, resp.

NCL 57B0

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

L17 ANSWER 9 OF 10 HCAPLUS COPYRIGHT 2004 ACS on STN

1970:17919 Document No. 72:17919 **Impermeable plastic** storage **containers** for consumable electrolyte-impregnated porous **zinc** anodes for **air**-electrode alkaline **batteries.** Moos, Anthony M. (Leesona Corp.). Fr. FR 1553429 19690110, 6 pp. (French). CODEN: FRXXAK. PRIORITY: US 19670208.

AB Each individual, rectangular plate-shaped, fragile anode is **encased** in a close-fitting, O-, electrolyte-tight plastic **sack** supported externally by an Al frame. The plastic can be polyethylene, polypropylene, poly(vinyl chloride), etc. A no. of **encased** anodes are contained in a strong, shock-proof packing **case** with cover made from thick plastic foam, by using polystyrene, poly(vinyl chloride), and (or) polyurethane. The activated anodes can be stored for long periods without deterioration. The packing design provides for simple, rapid, mech. replacement of used anodes in air- or O2-depolarized alk. batteries, with no need for addn. of electrolyte.

IC H01M

CC 77 (Electrochemistry)

ST impermeable storage **cases** electrodes; storage

cases electrodes; electrodes storage alk batteries; alk batteries Zn electrodes; batteries alk Zn electrodes; zinc electrodes alk batteries

IT Urethane polymers, uses and miscellaneous
(**containers**, for **zinc-air** alk. **batteries**)

IT 7440-66-6, uses and miscellaneous
(anodes, in air batteries, **containers** for)

IT 9002-86-2, uses and miscellaneous 9003-53-6, uses and miscellaneous
(**containers**, for **zinc-air** alk. **batteries**)

L17 ANSWER 10 OF 10 HCAPLUS COPYRIGHT 2004 ACS on STN

1969:487165 Document No. 71:87165 Recharging an electrochemical cell. Chodosh, Stewart M. (Leesona Corp.). U.S. US 3457488 19690722, 5 pp. (English). CODEN: USXXAM. APPLICATION: US 1965-517594 19651230.

AB A method is described of recharging a replaceable consumable anode of a metal-O electrochem. cell in which the metal anode is positioned within the nonconsumable cathode. The discharged anode is placed in a **holder** to maintain its structure and recharged against a counter electrode as Ni **sheet**, by using as an electrolyte a soln. of the salt of the anode metal.

IC H01M

NCL 320004000

CC 77 (Electrochemistry)

IT **Batteries**, primary
(**zinc-air**, recharging replaceable consumable anodes in)

=> d l19 1-59 cbib abs hitstr hitind

L19 ANSWER 1 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN

2004:21888 Method for prevention of **leakage** of liquid from **zinc-air battery**. Zhou, Zhentao; Zhou, Xiaobing; Yu, Dongsheng (Huanan University of Sciences & Technologies, Peop. Rep. China). Faming Zhuanli Shenqing Gongkai Shuomingshu CN 1366356 A 20020828, 6 pp. (Chinese). CODEN: CNXXEV. APPLICATION: CN 2001-129823 20011030.

AB The method comprises mounting a porous (network, fibrous, or foam) water-absorbing material (starch-modified or cellulose- modified resins, acrylic acid polymers, or poly(vinyl alc.)) on the inner wall of a battery **casing**.

IC ICM H01M002-00
ICS H01M012-06; H01M012-02

CC 52 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **zinc air battery** liq **leakage** prevention

L19 ANSWER 2 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
2003:667347 Document No. 139:182887 Method of applying adhesive to electrochemical cell components. Gibbons, Daniel W.; Kolb, Michael; Nizker, Ilya; White, Leo (The Gillette Co., USA). U.S. US 6610353 B1 20030826, 14 pp. (English). CODEN: USXXAM. APPLICATION: US 2002-252851 20020923.

AB A spray method of applying liq. adhesive to surfaces of components of an electrochem. cell is disclosed. The adhesive is applied by spraying through a nozzle, preferably activated by a piezoelec. transducer. The nozzle can be an elongated resilient tube terminating in an outlet opening. The adhesive is preferably sprayed in a pulsed stream of droplets. The liq. adhesive is desirably dispensed in fine droplets at a rate of between about 500 and 5000 droplets/s. The method is effective in applying adhesive to narrow width or difficult to reach surfaces of cell components in a precise, consistent and reproducible manner. In a specific application the adhesive can be applied to the narrow recessed step surrounding the terminal portion of the cathode **casing** of a zinc/air button cell. In such application the adhesive provides a tight seal between the cathode **casing** and cathode assembly, thereby preventing **leakage** of electrolyte from the cell.

IC ICM B05D005-12
NCL 427058000; 156060000; 156295000; 156325000; 427207100; 427208600; 427421000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72
IT **Containers**
(battery cathodes; method of applying adhesive to electrochem. cell components)
IT Primary **batteries**
(button-type, **Zn-air**; method of applying adhesive to electrochem. cell components)
IT Battery cathodes
(**casing**; method of applying adhesive to electrochem. cell components)
IT Fluoropolymers, uses
(electrolyte barrier **sheet**; method of applying adhesive to electrochem. cell components)
IT 9002-84-0, Teflon
(electrolyte barrier **sheet**; method of applying adhesive to electrochem. cell components)

L19 ANSWER 3 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
2003:94694 Document No. 138:156262 **Air-zinc**

electric **battery** with improved water-repellent film and layer from PTFE. Koda, Hitoshi; Ohashi, Masatomo (Toshiba Battery Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2003036895 A2 20030207, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-219237 20010719.

AB An **air-zinc** elec. **battery** comprises a PTFE water-repellent film press bonded to 1 side of a pos. electrode catalyst **sheet** and a PTFE water-repellent layer between an air electrode and the bottom of a pos. electrode **case**. The Gurley no. of the water-repellent film and layer is 4000-15,000 and 1500-2000, resp. The water-repellent film is press bonded to the pos. electrode catalyst **sheet** in a state in which pores in the film are filled with a volatile liq. The adjustment of air permeability is conducted with a roller. The battery has improved heavy-discharge characteristic and **leakage** -resistance characteristic.

IC ICM H01M012-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **air zinc** elec **battery** water repellent film PTFE

IT Primary **batteries**
Water-resistant materials
(**air-zinc** elec. **battery** with improved water-repellent film and layer from PTFE)

IT Fluoropolymers, uses
(**air-zinc** elec. **battery** with improved water-repellent film and layer from PTFE)

IT Permeability
(**air**; **air-zinc** elec. **battery** with improved water-repellent film and layer from PTFE)

IT Water-resistant materials
(films; **air-zinc** elec. **battery** with improved water-repellent film and layer from PTFE)

IT Films
(water-resistant; **air-zinc** elec. **battery** with improved water-repellent film and layer from PTFE)

IT 9002-84-0, Polytetrafluoroethylene
(**air-zinc** elec. **battery** with improved water-repellent film and layer from PTFE)

L19 ANSWER 4 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN

2002:814506 Document No. 137:313528 **Zinc/air** button **battery**. Ramaswami, Karthik; Gibbons, Daniel; Buckle, Keith (The Gillette Company, USA). PCT Int. Appl. WO 2002084761 A2 20021024, 41 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ,

DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2002-US10956 20020409. PRIORITY: US 2001-829710 20010410.

AB A zinc/air button cell comprises a cathode **casing** and an anode **casing** wherein the anode **casing** is inserted into the cathode **casing**. The anode **casing** is formed of multiclad metal layers, for example nickel/stainless steel/copper. A protective metal is plated onto the exposed peripheral edge of the anode **casing**. The protective metal is desirably selected from copper, tin, indium, silver, brass, bronze or gold. The application of the protective metal covers the multiclad metals exposed along the peripheral edge surface. The protective metal is also desirably plated onto the portion of the outside surface of the anode **casing** abutting the insulating material placed between the anode and cathode **casing**. Application of the protective metal to the anode **casing** peripheral edge eliminates the potential gradients caused by exposure of the different metals comprising the multiclad material. This reduces the chance of electrolyte **leakage** which can be promoted by secondary reactions occurring along the anode **casing** peripheral edge.

IC ICM H01M

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **battery** button **zinc air**

IT Primary **batteries**
(button-type; **zinc/air** button **battery**
)

IT Alloys, uses
(protective **metal**; **zinc/air** button **battery**)

IT **Battery** anodes
Electrodeposition
(**zinc/air** button **battery**)

IT 12666-03-4
(binder; **zinc/air** button **battery**)

IT 1313-13-9, Manganese dioxide, uses 7440-02-0, Nickel, uses
(coating; **zinc/air** button **battery**)

IT 7440-22-4, Silver, uses 7440-31-5, Tin, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 7440-74-6, Indium, uses 11110-87-5 12597-70-5, Bronze 12597-71-6, Brass, uses
(protective **metal**; **zinc/air** button **battery**)

IT 7440-66-6, **Zinc**, uses 12597-68-1, Stainless steel, uses 12783-69-6
(**zinc/air** button **battery**)
IT 7439-97-6, Mercury, uses 7440-44-0, Carbon, uses
(**zinc/air** button **battery**)

L19 ANSWER 5 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
2002:363420 Structure for a **metal-air** **battery** cell having a brass **casing** element.
Ein-Eli, Yair; Shrim, Yaron; Bogdanovsky, Victor (Electric Fuel (E.F.L.) Ltd., Israel). PCT Int. Appl. WO 2002039515 A2 20020516
DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-IB2124 20011113.
PRIORITY: US 2000-711035 20001113.
AB A **leak** proof **casing** for a battery cell having an anode **casing** element made at least partially of brass and having features for improving the strength of the **casing** element.
IC ICM H01M002-00

L19 ANSWER 6 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
2001:868876 Document No. 136:9104 **Zinc/air** **battery** with adhesive sealant between a portion of the cathode and the cathode **casing**. Wandeloski, William J.; Searle, Gary M.; Shepard, Vance Roger; McHugh, William T. (The Gillette Company, USA). PCT Int. Appl. WO 2001091225 A1 20011129, 34 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2001-US17001 20010524.
PRIORITY: US 2000-578549 20000525.
AB A zinc/air button cell has an adhesive sealant applied to a portion of the inside surface of the cell's cathode **casing**. The adhesive sealant can be applied to the inside surface of a recessed annular step surrounding the cell's pos. terminal on the cathode **casing**. The adhesive is preferably applied in a pattern

which conforms to the shape of the annular recessed step. An electrolyte barrier **sheet**, preferably of Teflon, can be applied to the adhesive pattern on the inside surface of the recessed step, preferably so that the adhesive bonds the edge of the barrier **sheet** to the step. The adhesive prevents electrolyte from **leaking** from the cell. The adhesive is applied preferably by prepg. a plate having a desired pattern etched thereon, filling the etching in the plate with an adhesive mixt., applying a silicone pad to the etching to transfer the adhesive pattern to the pad, then applying the pad to the inside surface of the cathode **casing** step to transfer the adhesive pattern thereto. The adhesive is preferably a solvent based mixt. comprising a polyamide.

IC ICM H01M012-06
ICS H01M012-02; H01M002-08

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **zinc air battery** adhesive sealant cathode

IT Polyamides, uses
(adhesive contg.; **zinc/air battery** with adhesive sealant between portion of cathode and cathode **casing**)

IT **Containers**
(**boxes; zinc/air battery** with adhesive sealant between portion of cathode and cathode **casing**)

IT Primary **batteries**
(button-type; **zinc/air battery** with adhesive sealant between portion of cathode and cathode **casing**)

IT Fluoropolymers, uses
(electrolyte barrier **sheet; zinc/air battery** with adhesive sealant between portion of cathode and cathode **casing**)

IT Silicone rubber, uses
(pads; **zinc/air battery** with adhesive sealant between portion of cathode and cathode **casing**)

IT Adhesives
Battery cathodes
Sealing compositions
(**zinc/air battery** with adhesive sealant between portion of cathode and cathode **casing**)

IT Carbon black, uses
(**zinc/air battery** with adhesive sealant between portion of cathode and cathode **casing**)

IT 7440-02-0, Nickel, uses 7440-50-8, Copper, uses
(coating; **zinc/air battery** with

adhesive sealant between portion of cathode and cathode **casing**)

IT 9002-84-0, Teflon
(electrolyte barrier **sheet; zinc/air battery** with adhesive sealant between portion of cathode and cathode **casing**)

IT 1310-58-3, Potassium hydroxide, uses 1313-13-9, Manganese dioxide, uses 7440-66-6, **Zinc**, uses 12597-68-1, Stainless steel, uses 80244-55-9
(**zinc/air battery** with adhesive sealant between portion of cathode and cathode **casing**)

IT 1314-13-2, Zinc oxide, uses 95918-09-5, Waterlock J-550
(**zinc/air battery** with adhesive sealant between portion of cathode and cathode **casing**)

L19 ANSWER 7 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN

2000:577826 Document No. 133:153129 Methods of extending the storage life of paper-**liner** battery part I. Soft sealant. Dong, Ming-Guang (Shanghai Zhongya Battery Institute, Shanghai, 201202, Peop. Rep. China). Dianyuan Jishu, 24(3), 125-127 (Chinese) 2000. CODEN: DIJIFT. ISSN: 1002-087X. Publisher: Dianyuan Jishu Bianjibu.

AB There are various reasons for the failure of zinc-manganese-dioxide paper-**liner** battery in storage. However, the main factor is that there is not tight seal in the battery. At present, the most popular sealant is pitch sealant, which, sometimes, can not adhere to carbon rod and zinc can perfectly. A soft sealant, which was made of the mixt. of chlorinated paraffin and epoxy resin was used in metal-jacket battery and the battery with sealing washer. It can prevent oxygen from flowing into the battery and prevent water vapor from **leaking** out of it. Moreover, it avoids the formation of **zinc-air battery** and the corrosion of zinc so that there was no white crystal occurring between zinc-can and paper **liner**. As a result, the descent of open-circuit voltage and short circuit current of battery was decreased greatly and its storage life is extended.

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST piper **liner** battery soft sealant storage life; zinc manganese dioxide paper **liner** battery storage life; chlorinated paraffin epoxy resin mixt battery sealant

IT Sealing compositions
Secondary batteries
Storage
(extension of storage life of zinc-manganese dioxide paper-**liner** battery by using mixt. of chlorinated paraffin and epoxy resin as soft sealant)

IT Epoxy resins, uses
Paraffin waxes, uses

(extension of storage life of zinc-manganese dioxide paper-**liner** battery by using mixt. of chlorinated paraffin and epoxy resin as soft sealant)

L19 ANSWER 8 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
2000:415638 Structure for a prism-shaped battery cell with a stress-generated seal. Shrim, Yaron; Abramson, Mariano; Dopp, Robert B. (Electric Fuel Limited, Israel). PCT Int. Appl. WO 2000036693 A1 20000622 DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-US28558 19991202. PRIORITY: US 1998-PV112292 19981215; US 1999-293458 19990415.

AB A **leak**-proof, prism-shaped, **metal-air** **battery** cell made from at least two mutually engaging **casing** elements to form a prism shaped structure. The **casing** elements are engaged to create a stress-generated seal between the **casing** elements that prevents electrolyte and other components from exiting the battery cell. The **casing** elements are separated by a sealing element where at least some of the stress is generated. The stresses are generally in the axial direction, and the **casing** elements are engaged and shaped to create this generally axial stress. The inner **casing** element is preferably shaped with side walls that flare outwards to prevent collapse and to improve electrical connectivity. The axial stress compensates for the lack of radial or hoop strength that are exhibited in button shaped battery cells.

IC ICM H01M012-06
ICS H01M002-02

L19 ANSWER 9 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
2000:415635 Structure for a prism-shaped **metal-air** **battery** cell with features to prevent electrolyte **leakage** and to maintain connectivity between an air cathode and a **casing** element. Abramson, Mariano; Dopp, Robert B.; Shrim, Yaron (Electric Fuel Limited, Israel). PCT Int. Appl. WO 2000036689 A1 20000622 DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB,

GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-US28253 19991130. PRIORITY: US 1998-PV112292 19981215; US 1999-293458 19990415.

AB A prism shaped battery cell has at least two **casing** elements. The **casing** elements are mutually engageable and are assembled by bending or crimping a portion of one **casing** element at least partially around a second **casing** element. The shape of the **casing** elements as well as the materials of the **casing** elements reduce the likelihood that the **casing** will corrugate during the crimping process. By reducing the size of the walls of a **casing** element at the corner portions, the negative effects of corrugation due to crimping are reduced. The **casing** elements also contain features that support a generally planar electrode in a position within the battery cell so that the edge of the electrode maintains contact with a **casing** element.

IC ICM H01M012-06
ICS H01M002-02

L19 ANSWER 10 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN

2000:415631 Sealing features in **metal-air** **battery** cells for the prevention of electrolyte **leakage**. Shrim, Yaron; Abramson, Mariano; Dopp, Robert B. (Electric Fuel Limited, Israel). PCT Int. Appl. WO 2000036668 A1 20000622 DESIGNATED STATES: W: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1999-US28421 19991201. PRIORITY: US 1998-PV112292 19981215; US 1999-293458 19990415.

AB A **leak** proof, **metal-air** **battery** cell having features for the prevention of electrolyte **leakage** through gaps between the **casing** elements of the battery cell and through openings formed on the battery cell. By forming the **casing** elements and/or the grommet positioned between the **casing** elements with at least one protrusion, the **casing** elements and grommet create a concentrated stress circumscribing the opening, which prevents the **leakage** of electrolyte. Also, through the addition of a liquid with a high viscosity, which is either coated on the grommet or in replacement of the grommet, the **leakage** of electrolyte is substantially prevented. Also a seal formed of at least one layer of generally uncompressed Teflon having flattened portions pressed against at least one

casing element. The interactive forces between the flatten portions of the uncompressed Teflon layer and the **casing** elements provide the sealing function.

IC ICM H01M002-08
ICS H01M012-06; H01M002-02

L19 ANSWER 11 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
2000:180109 Document No. 132:210226 **Zinc-air battery** with liquid **leakage** preventive structure.
Kikuma, Yuichi; Ohashi, Masatomo; Watabe, Hiroshi; Ogata, Hideyuki (Toshiba Battery Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000082505 A2 20000321, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-250609 19980904.

AB This **Zn-air battery** comprises an air diffusion layer made of a metal porous body with a 3-dimensional structure in a lower part of a cathode **case.** Without deteriorating the discharging performance, **leakage** of the alk. electrolytic soln. of the **Zn-air battery** can be prevented.

IC ICM H01M012-06
ICS H01M002-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 51

IT **Battery** cathodes
(**zinc-air batteries** comprising air diffusion layer of metal porous body with three-dimensional structure for **leakage** prevention)

IT Primary **batteries**
(**zinc-air; zinc-air batteries** comprising air diffusion layer of metal porous body with three-dimensional structure for **leakage** prevention)

IT 7440-02-0, Nickel, uses
(porous, air diffusion layer made of; **zinc-air batteries** comprising air diffusion layer of metal porous body with three-dimensional structure for **leakage** prevention)

L19 ANSWER 12 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
2000:180108 Document No. 132:210225 **Metal-air battery** with liquid **leakage** preventive structure.
Honda, Kazuyoshi; Hashimoto, Kazuhiro; Takagi, Ryosuke (Sony Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2000082504 A2 20000321, 12 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-249986 19980903.

AB This **metal-air battery** comprises a cylindrical **battery** can having a closed bottom part and a cylindrical and hollow air electrode whose one end is sealed with a 1st metal sealing material having a folded-back part and the other

end is sealed with a 2nd metal sealing material having a folded-back part and a closing plate to close the opening: and the air electrode is so **housed** in the can as to put the 2nd sealing material side in the bottom part and as to fix the 2nd sealing material in the can. Asphalt, polyamide, or polyolefin type resin may be applied to the contact faces of the 1st sealing material and the battery can for sealing. The **metal-air battery** is manufd. by sealing one end of the air electrode with the 1st sealing material, sealing the other end of the air electrode and simultaneously closing the opening of the air electrode with the 2nd sealing material, **housing** the air electrode in a cylindrical battery can in the defined manner, and fixing the 2nd sealing material in the battery can. Owing to the sealing materials and fixation of the 2nd sealing material, the **metal-air battery** has an excellent **leakage** preventive structure and high discharging capacity.

IC ICM H01M012-06
ICS H01M002-04

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 51

ST air battery cathode sealing **leakage** prevention

IT Primary batteries
(air batteries as; air batteries comprising air electrode with defined sealing and fixation structure for **leakage** prevention)

IT Battery cathodes
(air batteries comprising air electrode with defined sealing and fixation structure for **leakage** prevention)

IT Carbon black, uses
(air battery cathode contg.; air batteries comprising air electrode with defined sealing and fixation structure for **leakage** prevention)

IT Asphalt
Polyamides, uses
Polyolefins
(sealing with; air batteries comprising air electrode with defined sealing and fixation structure for **leakage** prevention)

IT 11129-60-5, Manganese oxide
(air battery cathode contg.; air batteries comprising air electrode with defined sealing and fixation structure for **leakage** prevention)

IT 7440-02-0, Nickel, uses
(air battery cathode cylindrical body coated with; air batteries comprising air electrode with defined sealing and fixation structure for **leakage** prevention)

IT 12597-68-1, Stainless steel, uses
(air battery cathode cylindrical body made of; air batteries

comprising air electrode with defined sealing and fixation structure for **leakage** prevention)

L19 ANSWER 13 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
2000:34368 Document No. 132:80941 Button-type **zinc-air battery.** Okamoto, Jiro; Ikehata, Toshihiko; Nakatsu, Kenichi (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2000012039 A2 20000114, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-175554 19980623.

AB The battery comprises (A) a cathode **case** composed of an air hole-having bottom successively laminated with a water-repellent membrane, an air electrode consisting of a catalyst layer-supporting net-shaped collector with 80-100% thickness of the total air electrode thickness, and a separator and (B) an anode **case** contg. Zn as an anode active material, which are insulated and closely sealed via a gaskets. The warpage of the separator, air electrode, and water-repellent film at the sealing process of the battery in its manuf. does not occur to prevent **leakage.**

IC ICM H01M004-86
ICS H01M012-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST button **zinc air battery** cathode collector thickness

IT Primary **batteries**
(button-type; button-type **zinc-air battery** with **leakage** prevention)

IT 12597-68-1, Stainless steel, uses
(Ni-plated net, collector; button-type **zinc-air battery** with **leakage** prevention)

IT 7440-02-0, Nickel, uses
(plating on stainless net collector; button-type **zinc-air battery** with **leakage** prevention)

L19 ANSWER 14 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1998:154556 Document No. 128:206815 Button type alkaline batteries. Soma, Naoko; Nakatsu, Kenichi (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 10064602 A2 19980306 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1996-222126 19960823.

AB The batteries have a cathode and a separator in a cathode **case** press sealed around the periphery of an anode **case** with a gasket in between, where a ring with a cut-off part is placed between the cathode and the gasket. **Zn/air batteries** of this structure have low electrolyte **leakage.**

IC ICM H01M012-06
ICS H01M004-86; H01M006-12

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **zinc air** button type **battery** structure
IT Primary batteries
(structure of button type alk. **zinc/air batteries**)

L19 ANSWER 15 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1997:380329 Document No. 127:20967 Button type alkaline **zinc /air batteries.** Morita, Korenobu; Nakatsu, Kenichi; Soma, Naoko; Takahashi, Norimasa; Oo, Fumio (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 09092239 A2 19970404 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-242888 19950921.
AB The batteries have a cap shaped anode **case** having a Sn layer plated on the inside and the inner diam. of the open end of the **case** is smaller than the inner diam. at the middle of the **case.** This structure increases the capacity of the battery and prevents electrolyte **leakage.**
IC ICM H01M002-04
ICS H01M006-12; H01M012-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST button type zinc battery anode **case**
IT Battery anodes
(structure of anode **case** for button type alk. **zinc/air batteries**)

L19 ANSWER 16 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1996:761690 Document No. 126:62668 Button type **zinc/ air batteries.** Takahashi, Norimasa; Morita, Korenobu; Ooo, Fumio (Matsushita Electric Ind Co Ltd, Japan). Jpn. Kokai Tokkyo Koho JP 08255599 A2 19961001 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1995-60766 19950320.
AB The batteries have an air diffusion layer between a cathode contg. a catalyst filled in a metal substrate and a cathode **case,** where the air diffusion layer has a convex side facing the **case** and the **case** has inward protrusions from its bottom around the periphery of the air diffusion layer. This structure render the batteries low internal resistance and prevents electrolyte **leakage.**
IC ICM H01M002-02
ICS H01M004-74; H01M004-86; H01M012-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT Battery cathodes
(structure of air diffusion layer and cathode **case** for button type **zinc/air batteries**)

L19 ANSWER 17 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1993:584783 Document No. 119:184783 Collapsing foam anode backing for **zinc/air battery.** Merry, Glenn W.;

Putt, Ronald A. (Matsi, Inc., USA). PCT Int. Appl. WO 9312554 A1 19930624, 24 pp. DESIGNATED STATES: W: AT, AU, BB, BG, BR, CA, CH, CS, DE, DK, ES, FI, GB, HU, JP, KP, KR, LK, LU, MG, MN, MW, NL, NO, NZ, PL, RO, RU, SD, SE, UA, US; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, DE, DK, ES, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1992-US10817 19921214. PRIORITY: US 1991-809196 19911216.

AB The **metal (Zn)/air battery** includes a **tray** having ≥1 air hole and a hydrophobic membrane covering the hole(s). A substantially flat air cathode is oriented parallel with the **tray** axis, and a sealant is used to ensure that the battery contents do not **leak** between the cathode and the **tray.** A metal (Zn) anode and an electrolyte are located in the **tray** interior and electronically isolated from the cathode. A collapsible (polyethylene) foam support is used to accommodate a change in the anode dimension. The pos. and neg. terminals are affixed to the ends of the substantially cylindrical **container.**

IC ICM H01M012-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

ST **zinc air battery** anode backing; polyethylene foam collapsible anode backing

IT **Batteries,** primary
(**metal-air,** vol. change-accommodating)

IT 9002-88-4, Polyethylene
(foam, collapsible backing, for **air battery metal** anodes)

L19 ANSWER 18 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN

1993:237743 Document No. 118:237743 Cylindrical **zinc/air batteries.** Ito, Ryoichi; Konishi, Hajime; Morita, Korenobu; Kondo, Masatsugu (Matsushita Electric Ind. Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 05047388 A2 19930226 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1991-199405 19910808.

AB The batteries have a hydrophobic hollow-fiber membrane installed between their cathode and tubular cathode **case.** The batteries have suppressed electrolyte **leakage** even after overdischarging.

IC ICM H01M004-86
ICS H01M012-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT **Batteries,** primary
(**zinc/air,** hollow PTFE-fiber diffusion layers for)

L19 ANSWER 19 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1992:218106 Document No. 116:218106 Air batteries. Hanabusa, Akira; Noya, Shigeto; Yoshino, Masaaki; Yanagihara, Nobuyuki (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 03297055 A2 19911227 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1990-101325 19900417.

AB The batteries have an O-diffusion cathode, a battery **case** with air-inlet openings, and a porous material filled between the cathode and the **case**, where the porous material has <100-Å pores with the pore surface contg. a salt whose satd. aq. soln. has (in the presence of the solid salt) a vapor pressure P <40% RH (RH = relative humidity at .apprx.20°), and is coated with a hydrophobic material on the side facing the battery **case**. The cathode-side surface of the porous material may contain a salt whose satd. soln. has P >70% RH. A porous glass was sputter coated with C2F4-C3F6 copolymer on 1 side, impregnated in a satd. aq. LiCl soln., and sputter coated KBr on the other side to obtain a porous material. Batteries using this material had good high- and low-rate discharge performance and suppressed electrolyte **leakage**.

IC ICM H01M002-16
ICS H01M002-14

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT **Batteries**, primary
(**air**, diffusers for, **lithium** chloride-impregnated hydrophobic material-coated porous glass as)

L19 ANSWER 20 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1991:495946 Document No. 115:95946 Air batteries. Hanabusa, Akira; Noya, Shigeto; Yoshino, Masaaki; Yanagihara, Nobuyuki (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 03108257 A2 19910508 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-246812 19890922.

AB The batteries have gas-diffusion cathode using O as active material, a battery **case** with air inlet, and an aramid membrane from arom. polyamide between the inside opening of the air inlet and the gas-diffusion cathode. The aramid membrane may be reinforced by glass or carbon fibers, and may be supported by porous PTFE membrane. This provides high performance at high and low discharge rate, resistance to electrolyte **leakage**, and storage stability, owing to selectivity of the membrane to O. Thus, **Zn-air batteries** having a 50 μm-thick aramid membrane showed superior performances to those without the membrane, esp. for low discharge rates.

IC ICM H01M002-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

L19 ANSWER 21 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1991:495945 Document No. 115:95945 Air batteries. Yoshino, Masaaki; Noya, Shigeto; Hanabusa, Akira; Yanagihara, Nobuyuki (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 03108256 A2 19910508 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-246811 19890922.

AB The batteries have gas-diffusion cathode using O as active material, a battery **case** with air inlet, and a polyimide membrane between the inside opening of the air inlet and the gas-diffusion cathode. The polyimide membrane may be supported by alkali-resistant porous membrane of polyolefin, fluoropolymer, or polysulfone. This provides high performance at high and low discharge rate, resistance to electrolyte **leakage**, and storage stability, owing to selectivity of the membrane to O. Thus, **Zn-air batteries** having polyimide membrane supported with porous polypropylene showed superior performances to those without the membrane, esp. for low discharge rates.

IC ICM H01M002-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

L19 ANSWER 22 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1991:495944 Document No. 115:95944 Air batteries. Yoshino, Masaaki; Noya, Shigeto; Hanabusa, Akira; Yanagihara, Nobuyuki (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 03108255 A2 19910508 Heisei, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1989-246810 19890922.

AB The batteries have gas-diffusion cathodes using O as active material, a battery **case** with air inlet, and a polyphosphazene membrane between the inside opening of the air inlet and the gas-diffusion cathode. The membrane may be supported by alkali resistant porous membrane of polyolefin, fluoropolymer, or polysulfone. This provides high performance at high and low discharge rate, resistance to electrolyte **leakage**, and storage stability, owing to selectivity of the membrane to O. Thus, **Zn-air batteries** having diisoamyloxyphosphazene polymer membrane supported with porous polypropylene showed superior performances to those without the membrane, esp. at low discharge rates.

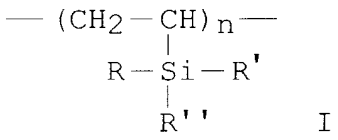
IC ICM H01M002-16

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

L19 ANSWER 23 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1990:500883 Document No. 113:100883 Batteries with laminated air-diffusion films. Takada, Kanji; Yanagihara, Nobuyuki; Yoshino, Masaaki; Fukuda, Hiroshi (Matsushita Electric Industrial Co., Ltd.,

Japan). Jpn. Kokai Tokkyo Koho JP 01267971 A2 19891025 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-96002 19880419.

GI



I

AB Batteries using O-diffusion cathodes have air inlet openings on their battery **cases** and a thin poly(vinyl triorganosilane) (I, R, R', R'' = H or alkyl group) film supported by ≥1 porous films between the inside surface of the **cases** and the cathodes. Thus, porous polypropylene films and nonwoven polypropylene fabrics were used for I (R = R' = R'' = Me). These films prevent electrolyte **leakage** from the batteries and increase their shelf life.

IC ICM H01M012-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT **Batteries**, primary
(**air-zinc**, **air**-diffusion films for, from poly(vinyl triorganosilane) films and porous supporting films)

L19 ANSWER 24 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN

1990:500882 Document No. 113:100882 Batteries with laminated air-diffusion films. Fukuda, Hiroshi; Yanagihara, Nobuyuki; Takada, Kanji; Yoshino, Masaaki (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01267973 A2 19891025 Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-96004 19880419.

AB Batteries using air-diffusion cathodes have air-inlet openings on their **cases** and a bis(3-isocyanopropyl)tetramethyldisiloxane-4,4'-diaminophenyl ether copolymer film supported with ≥1 porous film between the **cases** and the cathodes. Porous polypropylene films and nonwoven polypropylene fabrics were used as supports in examples. These films prevent electrolyte **leakage** from the batteries and increase their shelf life.

IC ICM H01M012-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

IT **Batteries**, primary
(**air-zinc**, with **air**-diffusion films from bis(isocyanopropyl)tetramethyldisiloxane-diaminophenyl ether

copolymer and porous supports)

L19 ANSWER 25 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1990:500881 Document No. 113:100881 Batteries with laminated air-diffusion films. Fukuda, Hiroshi; Yanagihara, Nobuyuki; Takada, Kanji; Yoshino, Masaaki (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01267974 A2 19891025 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-96005 19880419.
AB Batteries using air-diffusion cathodes have air-inlet openings on their **cases** and a vinyltrimethylsilane-hexamethylcyclotrisiloxane copolymer film supported with ≥1 porous film between the **cases** and the cathodes. Porous polypropylene films and nonwoven polypropylene fabrics were used as supports in examples. These films prevent electrolyte **leakage** from the batteries and increase their shelf life.
IC ICM H01M012-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
IT **Batteries**, primary
(**air-zinc**, with **air**-diffusion films from vinyltrimethylsilane-hexamethylcyclotrisiloxane copolymer and porous supports)

L19 ANSWER 26 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1990:482132 Document No. 113:82132 Batteries with laminated air-diffusion films. Fukuda, Hiroshi; Yanagihara, Nobuyuki; Takada, Kanji; Yoshino, Masaaki (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01267972 A2 19891025 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-96003 19880419.
AB Batteries using air-diffusion cathodes have air inlet openings on their battery **cases** and a vinylphenol-di-Me siloxane block copolymer film supported with ≥1 porous films between the inside surface of the **cases** and the cathodes. Porous polypropylene films and nonwoven polypropylene fabrics were used as supports. These films prevent electrolyte **leakage** from the batteries and increase the shelf life of the batteries.
IC ICM H01M012-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
IT **Batteries**, primary
(**air-zinc**, **air**-diffusion films for, contg. vinylphenol-di-Me siloxane copolymer films and porous supporting films)

L19 ANSWER 27 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1990:462624 Document No. 113:62624 Batteries with laminated air-diffusion films. Takada, Kanji; Yanagihara, Nobuyuki; Yoshino,

Masaaki; Fukuda, Hiroshi (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01267970 A2 19891025 Heisei, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-96001 19880419.

AB Batteries using O-diffusion cathodes have air inlet opening on their battery **cases** and a thin siloxane copolymer film laminated with ≥1 porous supporting films between the inside surface of the **cases** and the cathodes. Thus, porous polypropylene films and nonwoven polypropylene fabrics were used as supporting films for di-Me di-Et siloxane films. These films prevent electrolyte **leakage** from the batteries and increase their shelf life.

IC ICM H01M012-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT **Batteries**, primary
(**air-zinc**, **air**-diffusion films for, from laminates of siloxane films and porous supporting films)

L19 ANSWER 28 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN

1989:598583 Document No. 111:198583 Batteries with oxygen-diffusion cathodes. Fukuda, Hiroshi; Yanagihara, Nobuyuki; Takada, Kanji; Yoshino, Masaaki (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01195678 A2 19890807 Heisei, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-20440 19880129.

AB Composites of poly[1-(trimethylsilyl)-1-propyne] film and supporting porous film(s), are placed between O-diffusion cathodes and air inlet holes on battery **case**. Batteries using these composites have long shelf life, high resistance to electrolyte **leakage**, and good preformance at hgih and low loads.

IC ICM H01M012-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT **Batteries**, primary
(**air-zinc**, poly[1-(trimethylsilyl)-1-propyne] films for)

IT 87842-32-8, Poly[1-(trimethylsilyl)-1-propyne]
(films, for alk. **air-zinc batteries**
)

L19 ANSWER 29 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN

1989:481356 Document No. 111:81356 Manufacture of air battery. Kawaguchi, Masao (Toshiba Battery Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01035876 A2 19890206 Heisei, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1987-190183 19870731.

AB In the manuf. of air batteries by placing gas-diffusion **sheets**, hydrophobic films, catalyst layers, and separators successively into cathode **cases** and sealing the cathode **cases** with anode parts via insulation gaskets, the gaps between the cathode **cases** and the peripheries of the

catalyst layers are sealed with a resin filler. Batteries of this structure do not show electrolyte **leakage** on storage and overdischargig.

IC ICM H01M012-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST battery air electrolyte **leakage**; resin electrolyte **leakage** air battery
IT **Batteries**, primary
(button-type, **zinc-air**, poly(vinyl alc.) filler for preventing electrolyte **leakage** in)
IT 9002-89-5, Poly(vinyl alcohol)
(filler, between cathodes and cathode **cases**, for preventing electrolyte **leakage** in air batteries)

L19 ANSWER 30 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1989:481355 Document No. 111:81355 Button-type air battery. Morita, Korenobu; Konishi, Hajime; Kondo, Masatsugu (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 01035875 A2 19890206 Heisei, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1987-191982 19870731.

AB The battery has a hydrophobic fabric placed between the cathode and anode **case** of the battery with the diam. of the fabric equal to the inner diam. of the cathode-retaining ring of the battery. The fabric can be a fluororesin (esp. PTFE prepd. at a temp. below its m.p.), polyethylene, polypropylene, or polyolefin. Batteries of this structure do not show electrolyte **leakage** after a 100-day storage at 60°.

IC ICM H01M012-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
ST battery button type air; fabric hydrophobic air battery **leakage**; PTFE fabric air battery **leakage**
IT Polyolefin fibers
Polypropene fibers, uses and miscellaneous
(fabrics, in button-type air batteries for preventing electrolyte **leakage**)
IT **Batteries**, primary
(button-type, **zinc-air**, hydrophobic fabrics for preventing electrolyte **leakage** in)
IT Synthetic fibers, polymeric
(ethylene, fabrics, in button-type air batteries for preventing electrolyte **leakage**)
IT Synthetic fibers, polymeric
(tetrafluoroethylene, fabrics, in button-type air batteries for preventing electrolyte **leakage**)

L19 ANSWER 31 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1989:98834 Document No. 110:98834 Button-type air battery. Morita,

Korenobu; Konishi, Hajime; Mizutani, Seiichi; Kondo, Masatsugu (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 63239783 A2 19881005 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1987-74681 19870327.

AB Button-type **Zn-air batteries** have cathode **cases** with air-supplying holes formed on the bottom and a porous fluororesin film with roughened surface on the inner side of the bottom. Batteries using these films do not need air-diffusion **sheet** and do not show electrolyte **leak** or insufficient supply of air with unstable discharge voltage.

IC ICM H01M012-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72

IT **Batteries**, primary
(button-type, **zinc-air**, hydrophobic **air**-diffusion layer from porous fluoropolymer film with rough surfaces for)

L19 ANSWER 32 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN

1989:42115 Document No. 110:42115 Preparation of gas-diffusion electrodes for air batteries or fuel cells. Watabe, Michio (Toshiba Battery Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 63236263 A2 19881003 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1987-68048 19870324.

AB A gas-diffusion electrode, having a catalyst layer in contact with a porous hydrophobic layer, is prepd. by coating the contacting side of at least 1 of the layers with a 1-15 wt.% PTFE dispersion, heat treating the coated layer, and bonding to the layers. The invention electrodes have high bonding strength between the layers and are useful for air batteries and fuel cells. Thus, a mixt. of active C powder (av. size 15 μm) and 40 wt.% PTFE (av. size 1 μm) was pressed into a 0.3-mm-thick film, pressed on a Ni collector to form a catalyst layer, the other side of the film was coated with a 10 wt.% PTFE dispersion at 20 g/m2, the coated side was heated at 250° for 5 min, pressed to a PTFE film at 300 kg/cm2, and cut to obtain a gas-diffusion electrode. After stored at 45° and relative humidity 90% for 3 mo, no electrolyte **leakage** and peeling of the electrode was obsd. in 100 button-type **air-Zn batteries** using the invention electrodes, whereas the nos. of electrolyte **leakage** and electrode peeling were 30 and 50 out of 100 control batteries, resp.

IC ICM H01M004-88

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT Electrodes
(gas-diffusion, **leak**- and peeling- reisitant, for batteries and fuel cells)

IT 7440-44-0, Carbon, uses and miscellaneous

(active, electrodes with catalyst **sheet** from PTFE and, gas-diffusion, for air batteries or fuel cells)

L19 ANSWER 33 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1989:42072 Document No. 110:42072 Button-type air batteries. Morita, Korenobu; Konishi, Hajime; Mizutani, Seiichi; Sawai, Tadashi (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 63198265 A2 19880816 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1987-28820 19870210.

AB The batteries have cathode **cases** with air-supplying holes forming on the bottom of the **cases** and preferably porous rubber films with roughened surface placed on the inside of the **cases**. Thus, 0.1-0.2-mm-thick soft neoprene rubber films with 2-10-μm-deep grooves were used as air-diffusion films for alk. **Zn-air batteries** having 0.1-0.15-mm-thick hydrophobic PTFE films between the air-diffusion layers and the acetylene black-active C cathodes of the batteries. When discharged in a 45° and 90% humidity environment through a 250-Ω load to 0.9-V cutoff, the invention batteries had an av. capacity C = 386 mA-h and none of the batteries showed electrolyte **leakage**, whereas batteries with nonwoven cloth air-diffusion films had C = 380 mA-h and all 10 batteries leaked.

IC ICM H01M012-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

IT **Batteries**, primary
(button-type, alk., **zinc-air**, with surface-roughened neoprene rubber air-diffusion films)

L19 ANSWER 34 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1988:513489 Document No. 109:113489 Laminar air batteries. Ooe, Yasushi; Matsumoto, Kenji; Hino, Yoshihiro (Toppan Printing Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 63126178 A2 19880530 Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-273140 19861117.

AB Laminar air batteries have hollow fibers for conducting air O to the batteries. The hollow fibers can be surface-coated with an O-permeable resin. Thus, 3 hollow polyethylene or polypropylene fibers (inner diam. 300 μm, pore size on the wall 0.1 μm, length 45 mm) were inserted through an opening on the cathode collector to the air-diffusion **sheet** on the Co phthalocyanine-catalytic cathode of a **Zn**-Hg/**air battery**. When discharged continuously through a 300-Ω load after a 12-mo storage at 20°, the av. capacity loss was 15 and 10% for batteries using polyethylene and polypropylene fibers, resp., vs. 25% for batteries having air-inlet openings without the fibers. The resp. nos. of batteries showing electrolyte **leak** after discharging were 3, 2, and 6 out of 30 batteries.

IC ICM H01M012-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

L19 ANSWER 35 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1988:135006 Document No. 108:135006 Power module assembly of electrochemical cells. Bennett, William R. (Gould, Inc., USA). U.S. US 4714662 A 19871222, 4 pp. Cont.-in-part of U.S. Ser. No. 862,613, abandoned. (English). CODEN: USXXAM. APPLICATION: US 1987-27061 19870317. PRIORITY: US 1986-862613 19860512.

AB A battery has a plurality of unit cells stacked in longitudinal relation, and each cell includes a frame, a gas consuming (air) cathode supported at 1 end of the frame and a consumable (Li) anode supported intermediate the ends of the frame by a flexible diaphragm spanning the frame. The diaphragm divides the frame into a **chamber** for introducing an electrolyte between the anode and the cathode, and an expansion **chamber** on the opposite side of the anode for introducing a fluid under pressure. The pressurized fluid biases the anode toward the cathode during anode consumption, and the diaphragm provides for longitudinal and angular movement of the anode to accommodate uneven corrosion of the anode. The frames of adjacent cells define a 3rd **chamber** between these cells for introducing a consumable gas to the cathode. An array of manifolds are formed throughout the frames of adjacent cells for introducing electrolyte between the anode and the cathode, for introducing consumable gas to the cathode, and for introducing fluid under pressure to the expansion **chamber**. The diaphragm prevents the **wetting** of the anode collector by the electrolyte and thus the reaction between the anode and the anode collector, and the sepn. of the pressurized fluid **chamber** from the consumable gas **chamber** simplifies the battery structure.

IC ICM H01M012-06
NCL 429027000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST **lithium air** multicell **battery**
IT **Batteries**, primary
(**lithium-air**, structure of multicell)

L19 ANSWER 36 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1988:115818 Document No. 108:115818 Air batteries. Nakamura, Toshiaki (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 62069472 A2 19870330 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-208817 19850924.

AB An air-diffusion layer between a cathode and a cathode **case** of an air battery contains an electrolyte absorbent to prevent alk. electrolyte **leaking** from the battery. Active C powder loaded with 1 wt.% Pt was blended with 25 wt.% PTFE dispersion, made into **sheets**, covered with 40-mesh Ni screens on the

electrolyte-facing side and with 100-μ porous PTFE film (vs. pore size 3μ) on the air side to form cathodes for air batteries having gelled Zn-3% Hg anodes. 1.0-Mm-thick cellulose-based air diffusion layers were loaded with 30 or 60 wt.% portland cement or 30 wt.% acidic SiO2 sol were used for the batteries. After discharged continuously through a 130-μ load at .apprx.20°, the no. of batteries showed electrolyte **leaking** through the air hole out of 50 batteries were 3,2, and 2 vs. 6 for batteries using air-diffusion layers without absorbents.

IC ICM H01M012-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST battery air electrolyte **leaking** absorbent; portland cement air battery; silica sol air battery
IT **Batteries**, primary
(**air-zinc**, alk., absorbents for preventing electrolyte **leak** in)
IT Cement
(portland, for prevention of electrolyte **leak** in alk. air batteries)
IT 7631-86-9, uses and miscellaneous
(acidic sol, for prevention of electrolyte **leak** in alk. air batteries)

L19 ANSWER 37 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1988:97921 Document No. 108:97921 Manufacture of gas-diffusion oxygen cathodes. Konishi, Hajime; Morita, Korenobu; Mizutani, Seiichi; Sawai, Tadashi (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 62268060 A2 19871120 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-111017 19860515.

AB A fluororesin-contg. (Mn oxide-active C) catalyst **sheet** is coated on 1 side with a dispersion of PTFE, dried to obtain a 3-7 mg PTFE/cm2 coating, and pressed with the opposite side to a porous fluororesin film, with heat treatment at 280-350° before or after the pressing to obtain a gas-diffusion O cathode for alk. batteries. Thus, button-type **Zn-air batteries** were stored at 45° in a 80% relative humidity atm. for 2 wks after completely discharged, none of batteries using cathodes of the invention showed electrolyte **leakage**, whereas batteries using cathodes coated with ≤2.0 mg PTFE/cm2 or cathodes pressed to fluororesin films heated at <280° or <350° did.

IC ICM H01M004-88
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
IT Fluoropolymers
(films, oxygen cathodes with, for prevention of electrolyte **leakage**, in batteries)

IT Cathodes
(battery, oxygen-catalytic, prevention of electrolyte **leakage** from, in batteries)
IT 7782-44-7, Oxygen, uses and miscellaneous
(cathodes, manganese oxide-active carbon-catalytic, prevention of electrolyte **leakage** of from, in batteries)
IT 9002-84-0, PTFE
(coatings, oxygen cathodes with, for prevention of electrolyte **leakage**, in batteries)

L19 ANSWER 38 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1987:537682 Document No. 107:137682 Manufacture of button-type air batteries. Mizutani, Seiichi; Morita, Korenobu; Konishi, Hajime; Miyashita, Isao (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 62145668 A2 19870629 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-286003 19851219.
AB The title batteries have a hole formed by centrifuging in the center of their Zn-electrolyte layer in the anode **case**. Alk. Zn/active C-catalyzed air batteries were assembled, sealed, and rotated at 5000, 10,000, and 20,000 rpm for 2-6 s. Batteries rotated at 5000 rpm did not form holes, but the others did. After discharged, none of batteries of the invention showed electrolyte **leak** through the air holes of the batteries whereas 1, 3, and 7 out of 20 control batteries showed **leak** after discharged at .apprx.20°, 45° and 70% humidity, and 45° and 90% humidity, resp.
IC ICM H01M012-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
IT **Batteries**, primary
(button-type, **zinc-air**, with central holes in zinc-electrolyte layer, for **leak** prevention)

L19 ANSWER 39 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1987:499793 Document No. 107:99793 Button-type air batteries. Morita, Korenobu; Sawai, Tadashi; Momose, Keigo (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 62140380 A2 19870623 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-281315 19851213.
AB Paraffin-treated hydrophobic air-diffusion **sheets** are used for the title batteries. Paraffin is dissolved in C2H3Cl3 or C6H6 for treatment. The **sheets** are woven or nonwoven cellulose, Nylon, or Vinylon fibers. When discharged continuously through a 250-Ω load at 45° and 90% relative humidity, **Zn-air batteries** using KOH electrolyte and air-diffusion **sheets** of the invention had an av. capacity of 380 mA-h and showed no **leak** at the end of discharging, whereas batteries using untreated **sheet** had

an av. capacity of 300 mA-h and 7 out of 10 batteries showed **leak**.
IC ICM H01M012-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
ST battery air diffusion **sheet** paraffin
IT Paraffin waxes and Hydrocarbon waxes, uses and miscellaneous
(air-diffusion **sheets** treated with, for button-type air batteries)
IT **Batteries**, primary
(button-type, **zinc-air**, with paraffin wax-treated air-diffusion **sheets**)

L19 ANSWER 40 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1987:217032 Document No. 106:217032 Button-type air battery. Watabe, Michio; Yamanobe, Teruji; Nakamura, Toshiaki; Sato, Hitomi (Toshiba Corp., Japan; Toshiba Battery Co., Ltd.). Jpn. Kokai Tokkyo Koho JP 62061279 A2 19870317 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-200562 19850912.
AB The diam., l, of an air-diffusion **sheet** placed in the sunken part of a cathode **case** of a button-type air battery is by ≤1 mm smaller than diam., L, of the sunken part. When discharged at 20° through a 250-Ω load, **Zn-air batteries** with L - l = 0, 0.5, and 1.0 mm had av. discharge times of 85 h and showed no electrolyte **leak**, whereas batteries having L - l = 1.5 and 2.0 mm had discharge times of 75 and 50 h and 10 and 30% of the batteries showed **leak**, resp.
IC ICM H01M012-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72
ST button type air battery; diffusion **sheet** air cathode
IT **Batteries**, primary
(button-type, **zinc-air**, diam. of air-diffusion **sheets** for)

L19 ANSWER 41 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1987:105481 Document No. 106:105481 Manufacture of air-battery cathode. Inada, Kuniaki; Yamanobe, Teruji; Watabe, Michio; Sato, Hitomi (Toshiba Battery Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 61256567 A2 19861114 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-95984 19850508.
AB A metal collector is attached to 1 side of a catalyst layer, the other side of the layer is wrinkled, bound to a hydrophobic layer via a fluororesin-dispersion binder, which is coated on either layer and heated at 200-400°, to obtain a cathode for an air battery. The collector is a 60-mesh Ni screen, the catalyst layer is an active C-40% fluororesin **sheet**, and the binder is

10-60 wt.% PTFE (or C2F4-C3F6 copolymer) dispersion sprayed at 1-50 g/m2 and heated at 200-400° for 5-60 min before binding the catalyst layer and the fluororesin hydrophobic layer. After 3-mo storage at 45° and 90% humidity, none of 200 **Zn-air batteries** using cathodes of the invention showed **leakage** whereas 5 out of 200 control batteries did.

IC ICM H01M004-88

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

L19 ANSWER 42 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN

1986:158148 Document No. 104:158148 Air battery. Izumikawa, Toshihiko; Koshiba, Nobuharu; Hayakawa, Hayashi (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 61002279 A2 19860108 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1984-122377 19840614.

AB A cathode-catalyst layer of a button-type air-battery has a hardened edge formed by impregnation with a thermosetting resin. Thus, a mixt. of β-MnO2 30, active C 30, acetylene black 20 and an aq. suspension of PTFE (60 wt.% solid) 30 wt. parts was applied to a Ni screen and dried to form a cathode catalyst layer. The edge of the layer was impregnated with a thermosetting resin (epoxy, urethane, or phenol) and the layer was heated to form a hardened edge. A porous PTFE hydrophobic film, the prepd. catalyst layer, and a crosslinked polyethylene separator were inserted to a cathode **case**. When a group of 10 button-type **air-Zn batteries** using these cathode **cases**, anode **cases** contg. anode active material and electrolyte, and insulating gaskets were stored at 45° and 90% relative humidity, the no. of batteries showing **leak** were 0, 0, 0, 0, 0, 0, 0, and 2 after 1, 2, 3, 4, 6, 8, 10, and 12 wk vs. 0, 0, 2, 3, 6, 8, 10, and 10 **leaking** batteries in a group of 10 batteries using catalyst layers without the hardened edges.

IC ICM H01M012-06
ICS H01M004-86

CC 72-3 (Electrochemistry)
Section cross-reference(s): 52

L19 ANSWER 43 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN

1986:21937 Document No. 104:21937 Manufacture of air cathode. Nakamura, Toshiaki; Sasaki, Kunihiko; Sato, Yuji (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 60136167 A2 19850719 Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-243705 19831226.

AB An air cathode is prepd. by pressing a catalyst layer on a current collector **sheet**, bending the **sheet** to a tube, and by spraying a suspension of a fluorocarbon resin to form a water-repelling layer on the outer surface of the tube. Thus, a cathode was prepd. by pressing a 40-mesh Ni grid to a **sheet**

contg. activated C powder 70, 100-mesh Ag powder 30, and 60% PTFE dispersion 50 wt. parts; bending the composite to a tube and spot welding the 2 opposite edges of Ni mesh; and by spraying a 60% PTFE soln. on the outer surface of the tube. Batteries contg. these cathodes and Zn anodes had on testing at a 100%-depth of discharge no electrolyte **leakages.**

IC ICM H01M004-88
ICS H01M012-06

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

ST **zinc air battery** cathode; silver air battery cathode

IT **Batteries,** secondary
(**zinc-air,** electrolyte **leakage** prevention in)

L19 ANSWER 44 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN

1985:623225 Document No. 103:223225 Air battery. Sasaki, Kunihiko; Nakamura, Toshiaki (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 60133658 A2 19850716 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-240993 19831222.

AB An air-battery cathode contains ≥1 gelling agent selected from CMC [9004-32-4], poly(acrylic acid), Na polyacrylate, and poly(vinyl alc.). Addn. of gelling agent(s) prevents impregnation of the electrolyte into the cathode and maintains the 3-phase interface at the cathode for long time. Thus, a **sheet** -form air cathode was prepd. from active carbon 75, PTFE dispersion 20, and CMC 5%, and Ag oxide catalyst. The **sheet** was pressed with the collector and bonded with hydrophobic FEP membrane. Button-type **air-Zn battery** using this cathode showed 6 **leakage cases** through the cathode after 2 mo storage at 25°, and 3, after 50% discharging, each out of 10 batteries. All of the 10 control batteries without CMC showed **leakages** under the same conditions.

IC ICM H01M004-86
ICS H01M012-06

CC 72-3 (Electrochemistry)

L19 ANSWER 45 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN

1985:494996 Document No. 103:94996 **Air-zinc battery.** (Toshiba Battery Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 59217967 A2 19841208 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-92092 19830525.

AB The inside bottom of a cathode can of an **Zn-air battery** has concave and convex regions to let the porous **sheet** (e.g., fluoropolymer) contact the cathode can via the concave and convex regions when the Zn anode gel swells in discharging. Optionally, the convex and concave regions may be

formed by coating or spraying a fiberlike material. The porous **sheet** is prevented from cracking and provides a **leakage**-free battery.
IC ICM H01M012-06
CC 72-3 (Electrochemistry)
ST **air zinc battery**; cathode can
zinc air battery; fluoropolymer
sheet zinc air battery
IT Fluoropolymers
(porous **sheet**, in **zinc-air** **battery** with cathode can with concave and convex regions)
IT **Batteries**, primary
(**zinc-air**)

L19 ANSWER 46 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1985:444840 Document No. 103:44840 Air battery. (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 60054182 A2 19850328 Showa, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-161990 19830905.
AB The gas electrode of an air battery is bonded, on its side in contact with air, to a composite membrane consisting of porous (pore diam. ≤0.1 μm) material, which contains metal oxide(s) within the membrane and on its surface, excluding the shielded part. The claim includes a similar battery using hydrophobic material beside the metal oxide(s). Metal oxide(s) are typically selected from those that absorbs O, those having rutile type structure, and those H2O-contg. or hydrated. Plasma-polymd. product of org. F-contg. monomer is conveniently used as the hydrophobic material. The membrane attached to the gas electrode provides highly selective permeability to O, and excludes atm. moisture and CO2, which results in increased life and storage stability. **Leakage** of alkali electrolyte is completely prevented. Thus, a porous polycarbonate membrane (av. pore diam. 0.03 μm;) was sputtered in Ar-O atm. using metal(s), which was either Sn, Zn, Al, Hg, Ca, Sr, V, Mo, W, Ru, Nb, Cr, Re, Os, Rh, Ir, Pt, Cu, Mn, Ni, Co, Ba, Ti, or Si as source, using a mask for shielding parts of the membrane. The body of the gas electrode was prepd. by kneading active C carrying 1% Pt with PTFE dispersion, **sheet** formation, bonding to Ni mesh collector on electrolyte side, and bonding with porous PTFE film on the air side, and formation by pressure. A battery was constructed using the electrode covered with the composite membrane, Zn-Hg (Hg 3%) anode material, gelled electrolyte contg. NaOH, and polyamide separator. Tests showed longer storage life, larger capacity under heavy load, and reduced electrolyte **leakage**, than the battery using membrane having metal oxides on its whole surface.
IC ICM H01M012-06
CC 72-3 (Electrochemistry)
IT **Batteries**, primary

(**zinc** amalgam-**air**, with composite membrane contg. metal oxides)
IT 7440-06-4, uses and miscellaneous
(carbon electrode contg., with composite membrane contg. **metal** oxides, for **air battery**)
IT 7440-44-0, uses and miscellaneous
(electrode, contg. platinum, with composite membrane contg. **metal** oxides, for **air battery**)

L19 ANSWER 47 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1985:409037 Document No. 103:9037 **Air-magnesium battery**. (Yuasa Battery Co., Ltd., Japan; Nippon Telegraph and Telephone Public Corp.). Jpn. Tokkyo Koho JP 59053666 B4 19841226 Showa, 3 pp. (Japanese). CODEN: JAXXAD. APPLICATION: JP 1979-82250 19790628.
AB An **air-Mg battery** comprises a plurality of cells, each cell contg. a rectangular **box**-shaped frame and a Mg anode. The frame is closed on 1 side and a rectangular air cathode is attached on its opposite side by using nylon tapes and epoxy resin around the cathode edges. Thus, a battery was prepd. with in-series-connected frames provided with Mg anodes and air cathodes attached to the frames with nylon tapes and epoxy resin. On charging the battery no electrolyte **leakage** was obsd., but 5 out of 20 frames of a similarly prepd. battery whose air cathodes were attached without nylon tapes leaked.
IC H01M012-06
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38
ST **magnesium air battery**
IT **Batteries**, secondary
(**air-magnesium**, leakproof)

L19 ANSWER 48 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1985:228316 Document No. 102:228316 **Air-zinc** button-type **battery**. (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 60049578 A2 19850318 Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-158333 19830829.
AB A **leakage**-proof **Zn-air** bottom-type **battery** having an increased **case**-vol. utilization consists of the following: (1) a cup-shaped **case** which has a flat bottom and air-intake hole and serves as a cathode terminal; (2) a ring placed around the inside bottom edges of the **case**; (3) a cathode catalyst layer which has a H2O-repellent layer on the air-intake side and placed on the ring; and (4) a separator layer placed on the catalyst-layer surface facing the Zn anode. Addnl., a H2O-adsorbing paper may be placed in the ring. Optionally, the ring may consist of an alkali-resistant metal or

synthetic resin (e.g., poly(vinyl chloride)).
IC ICM H01M012-06
CC 72-3 (Electrochemistry)
ST **air zinc battery leakage** proof
IT **Batteries**, primary
(**zinc-air**, button-type, **leak**-proof)
IT 7440-66-6, uses and miscellaneous
(anode, in button-type **leakage**-proof battery)
IT 9002-86-2
(ring, in button-type **zinc-air** **battery**)

L19 ANSWER 49 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1985:139812 Document No. 102:139812 Air electrode. (Sanyo Chemical Industries Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 59221971 A2 19841213 Showa, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-96535 19830530.
AB An air electrode consists of porous metal capable of electrochem. redn. of O2, which serves also as a collector, and carries, on its gas **chamber** side, wetproofed gas-permeable membrane consisting of 1-monoalkyldimethylsilylpropyne polymer, having the repeating unit C(Me):C(SiMe2R) (R = C1-12 alkyl). The electrode is thin, but it operates under heavy load without electrolyte **leakage**. Thus, a test showed that 1-(trimethylsilyl)propyne polymer film exhibited O2 permeability 100-1000 fold higher than that consisting of tetrachloroethylene-hexachloropropylene copolymer. An air electrode was prepd. by coating a porous Ag plate on 1 side with 1% PhMe soln. of 1-(trimethylsilylpropyne polymer, to form a 0.5-μm film. Excellent results were obtained by using the electrode in a **Zn-air battery**.
IC ICM H01M004-86
ICS G01N027-30; H01M012-06
CC 72-3 (Electrochemistry)
ST air electrode alkylsilylpropyne polymer membrane; **zinc** **air battery**
IT **Batteries**, primary
(**zinc-air**)

L19 ANSWER 50 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1985:35434 Document No. 102:35434 Gas diffusion electrodes. (Asahi Glass Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 59133386 A2 19840731 Showa, 7 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1982-154594 19820907.
AB A mixt. layer composed of C powder carrying a catalyst and fluoroethylene resin is allowed to adhere to a fine porous **sheet** in which C powder is dispersed to give a gas diffusion electrode. The electrodes have excellent formability, do not

leak liq. to a gas side while in use, and hence they have excellent durability. The electrodes are useful for H-O **fuel cells** and **air-zinc batteries.** Thus, a paste mixt. composed of polytetrafluoroethylene, Vulcan XC 72R (C black; from Cabot Corp.) and solvent naphtha was extruded, rolled, and baked to give a porous **sheet.** Paste composed on (1) Vulcan XC 72R carrying Pt, (2) FEP particles dispersed in water, (3) Me cellulose and (4) cyclohexanol was screen printed on 1 surface of the **sheet,** and dried. A Ni expanded mesh plated with Ag was coated with a mixt. composed of C black and FEP, and the **sheet** was hot pressed on the mesh to give an electrode. The electrode was used as a cathode in a brine cell having an anode, an ion-exchanging membrane and an air supply **chamber.** The electrolyzer showed stabilized electrolysis voltage and excellent elec. current efficiency for producing NaOH.

IC C25B011-00; C25B013-00; H01M004-88
CC 72-9 (Electrochemistry)

L19 ANSWER 51 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1984:164297 Document No. 100:164297 Button-type air battery. (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 58204479 A2 19831129 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1982-88198 19820524.

AB A **leak** roof button-type air battery is described which contains an elastic sealing ring made of synthetic resin or rubber attached around a sealing plate with an amalgamated Zn anode with aq. KOH electrolyte packed inside this sealing plate. A sealing resin is also applied to the inner surface of the cathode **case** except the part which touches the outer surface of the catalyst layer. A air hole is provided in the bottom of the **case.** An air-diffusion paper is placed on the concave part of this cathode **case** and a water-repellent film is placed on this paper. This water-repellent paper has placed on it a catalyst consisting of active C, acetylene black, and a PTFE emulsion binding agent, all contained in a Ni net. A separator is placed on this catalyst layer and this cathode is attached to the anode sealing body.

IC H01M012-06
CC 72-3 (Electrochemistry)
ST air button type battery; **zinc** amalgam anodic **air battery;** leakproof air button type battery

L19 ANSWER 52 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1984:37143 Document No. 100:37143 Air cathode. (Toshiba Corp., Japan). Jpn. Kokai Tokkyo Koho JP 58154175 A2 19830913 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1982-36569 19820310.

AB A mech. strong, leakproof air cathode is produced by prepg. a

3-layer laminated **sheet** of a water-repellent and O-permeable layer, a porous catalytic layer which can electrochem. reduce O, and a grid layer; bending or folding the 3-layer **sheet**; welding the grid layer on the overlapped ends; and flame spraying the welded area with a chem. resistant polymer to give a cylinder or prism with the 1st layer outside. Thus, an assembly of a 100μ PTFE porous film (av. pore diam. 10μ), a 0.5-mm-thick foil prepd. by rolling a powd. active C contg. 5% Pt and 20% PTFE, and a 0.1-mm-thick Ni mesh (40 mesh) was pressed at 1 ton/cm2 to give a **sheet**. The PTFE film and foil were removed from a 2-mm wide rim on both ends of the **sheet**. The **sheet** was bent, spot welded, and the welded area was flame sprayed with an epoxy resin to .apprx.0.7 mm to give a cylindrical cathode with tensile strength of 300 kg/cm2, and 22 of 300 **air-Zn batteries** using these cathodes started to **leak** after 1 yr at 25°, compared with 80 kg/cm2 and 44, resp., for similar batteries whose cathodes were prepd. by using a polyethylene hot-melt adhesive and a PTFE **sheet** instead of spot welding and flame spraying.

IC H01M004-88

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

L19 ANSWER 53 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN

1983:129261 Document No. 98:129261 Air electrode. Takamura, Tsutomo; Sato, Yuichi; Nakamura, Toshiaki; Suzuki, Nobukazu (Toshiba Corp., Japan). Eur. Pat. Appl. EP 54688 A2 19820630, 23 pp. DESIGNATED STATES: R: CH, DE, FR, GB, NL. (English). CODEN: EPXXDW. APPLICATION: EP 1981-108924 19811026. PRIORITY: JP 1980-181394 19801223.

AB An air electrode for H-O **fuel cell**, **metal-air battery**, or O sensor comprises a porous body which incorporates a F-contg. solvent. Thus, active C powder contg. 10% MnO_2 was treated with chlorotrifluoroethylene [79-38-9] contg. perfluorodecalin [306-94-5]. To this was added 10-20% of a 60% dispersion of PTFE [9002-84-0], kneaded, and spread to form **sheets**, which were pressed on each side of a Ni net to form an air electrode. A composite thin film (6-μ thick) of a lamination of PTFE and FEP [25067-11-2] was fused to the electrode by heating at 250°. **Air-Zn batteries** assembled with this and conventional electrodes were discharged for 5 min at various currents and the current values at which the terminal voltages after 5 min were at most 1.0 V were measured. The resp. c.d. and the no. of days till **leakage** occurred for batteries with electrode according to invention and conventional electrodes were 62 and 25 mA/cm3 and 74 and 20 days.

IC H01M004-86; H01M004-96; G01N027-26

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 72

ST **zinc air battery** electrode; fuel cell
oxygen electrode; carbon manganese dioxide oxygen electrode; chlorotrifluoroethylene perfluorodecalin oxygen electrode

L19 ANSWER 54 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1978:155747 Document No. 88:155747 **Metal-air batteries.** Langrish, Leslie William; Hartley, Vernon Bryon; McGuire, Michael Edward (Electric Power Storage Ltd., UK). Brit. GB 1489576 19771019, 7 pp. (English). CODEN: BRXXAA. APPLICATION: GB 1973-45330 19741220.

AB A reserve-type **Zn-air battery** storable 5-10 y was manufd. from several air electrode-metallic plate electrode-air electrode cells, each of which was mounted between 2 adjacent injection-molded polystyrene [9003-53-6] frames. The Zn electrode was wrapped in 3 layers of nonwoven cellulose. Each frame contained an air space and slots to admit air to the adjacent air electrodes. The air space contained a corrugated PVC support. The side limbs of the frames extended above the cells to form the side walls of an electrolyte reservoir. The reservoir contained a **bag** of electrolyte which, when ruptured, poured electrolte through grooves in adjacent polystyrene frames into the cells. A wick was also provided in the frames to siphon off H2O that is absorbed in high-humidity conditions and which might otherwise rise into the reservoir and cause current **leakage.**

IC H01M006-38
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
ST battery cell polystyrene frame; **zinc air battery** frame; reserve battery polystyrene frame
IT **Batteries**, primary
(reserve, **zinc-air**, polystyrene frames for)
IT 9003-53-6
(frames for **zinc-air** cells for reserve-type **batteries**)

L19 ANSWER 55 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1977:524634 Document No. 87:124634 Zinc-air minicell. Wiacek, Marian (Unican Electrochemical Products Ltd., Can.). Ger. Offen. DE 2644006 19770414, 31 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1976-2644006 19760927.

AB A button-type battery for use in hearing aids is described. In this battery, polymer seals are used between the inner and outer cans (or **cases**) to insure a **leak**-proof cell. These seals can be made of a variety of polymers including polyethylene and poly(tetrafluoroethylene). Resins and rubbers can also be used. The metals for the cans include Cu, Ni, and stainless steel.

IC H01M012-02
CC 72-2 (Electrochemistry)
ST battery primary hearing aid; polymer seal **zinc air**

battery; resin seal **zinc air**
battery; rubber seal **zinc air**
battery

IT Hearing
(aids, **zinc-air** primary **batteries** for)

IT Acrylic polymers, uses and miscellaneous
Phenolic resins, uses and miscellaneous
Rubber, butyl, uses and miscellaneous
(seals, for **zinc-air** miniature **batteries**)

IT **Batteries**, primary
(**zinc-air**, for hearing aids)

IT 9002-84-0 9002-88-4 9003-07-0 64156-41-8
(seals, for **zinc-air** miniature **batteries**)

L19 ANSWER 56 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1973:460875 Document No. 79:60875 Rechargeable battery. Fresnel, Jean M.; Warszawski, Bernard (Societe Generale de Constructions Electriques et Mecaniques (Alsthom)). Fr. Demande FR 2146144 19730406, 14 pp. (French). CODEN: FRXXBL. APPLICATION: FR 1971-26620 19710720.

AB Rectangular Zn-air cell stacks were made of thin **sheet** members in plastic gasket-like frames, with air and electrolyte feed and vent channels formed by holes through the upper and lower gasket frames, connected to the active member by microcanals .apprx.1 cm long and tenths of a mm wide, to minimize current **leakage** along electrolyte channels. Each cell consisted of a bipolar O-Zn electrode, an expanded stainless steel screen to immobilize ZnO formed on discharge, a felted filter to contain ZnO and pass sol. zincate electrolyte, a metal screen separator and a microporous membrane. An alkali metal hydroxide electrolyte was used. The O side of the bipolar electrode was coated with poly(tetrafluoroethylene)-bonded carbon black.

IC H01M
CC 77-2 (Electrochemistry)
ST **zinc air** rechargeable **battery**

IT **Batteries**, secondary
(**zinc-air**, bipolar electrode coated with Teflon bonded carbon black in)

L19 ANSWER 57 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1972:428077 Document No. 77:28077 Experimental vehicular **zinc -air battery** with replaceable anodes.
Witherspoon, Romeo R.; Zeitner, Edward J.; Schulte, Harold A. (Res. Lab., Gen. Mot. Corp., Warren, MI, USA). Intersoc. Energy Convers. Eng. Conf., Proc., 96-102. Soc. Automot. Eng.: New York, N. Y.

(English) 1971. CODEN: 24WRAH.

AB Eng. details of an exptl. **Zn-air battery** of the replaceable-anode type and its components, such as cell design, anode and cathode structures, elec. connections, and air space blower controls are described. A low cost catalyst is employed in the air depolarized cathodes. It served as the energy battery in a dual battery hybrid power train system installed in a 3000-lb test-bed vehicle. The 640-lb battery **package** provided 35 kW-hr and 10 W/lb at 30 mi/hr and 28 kW-hr and 27 W/lb at 55 mi/hr. Actual battery performance data are also presented. The Zn-air system provides adequate power and energy storage to give good range for small elec. vehicles. The energy storage ranges from about 55 W-hr/lb at 10 W/lb to 33 W-hr/lb at 33 W/lb and was 3-5 fold greater than that in Pb-acid batteries. The mech. rechargeable system is impractical for large power vehicle applications. The power output was less than predicted, although satisfactory for the required performance in a small vehicle. The battery output slowly decreased with the no. of cycles. Some of the problems are (1) excessive time for changing anodes and electrolyte; (2) temp. changes in the battery caused large vol. changes in the electrolyte; (3) electrolyte **leakage** from the overflow of the cells caused minor shorts, and (4) excessive condensation occurred in the battery **cases** after operating them at high power levels.

CC 77-2 (Electrochemistry)

ST **zinc air battery** replaceable anode; vehicular **zinc air battery**

IT Anodes
(**zinc**, replaceable and **air batteries**)

IT **Batteries**, primary
(**zinc-air**, with replaceable **zinc** anodes)

L19 ANSWER 58 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN

1971:557652 Document No. 75:157652 Battery of primary cells through which electrolyte is circulated. Martin, Derick John (Qualcast Ltd.). Brit. GB 1249308 19711013, 9 pp. (English). CODEN: BRXXAA. APPLICATION: GB 19680508.

AB A **battery** of **primary metal-air cells** is provided, through each of which, during use of the battery, filtered electrolyte from a common supply, contg. a corrosion inhibitor, is circulated. Each cell has an electrolyte **chamber** and an inlet and an outlet port. With at least 1 port of each cell a means is assocd. for continually interrupting the electrolyte flow through the port during operation of the battery, to prevent or substantially reduce the formation of intercell **leakage** current paths through the electrolyte.

IC H01M

CC 77 (Electrochemistry)
IT **Batteries**, primary
(**metal-air**, with circulating electrolyte)

L19 ANSWER 59 OF 59 HCAPLUS COPYRIGHT 2004 ACS on STN
1969:92674 Document No. 70:92674 Electrodes containing unsintered poly(tetrafluoroethylene) film. Fishman, Jerry H. (Leesona Corp.). S. African ZA 6800949 19680709, 21 pp. (English). CODEN: SFXXAB. PRIORITY: US 19670220.
AB Sintered poly(tetrafluoroethylene) (I) **sheet** was replaced by an unsintered film, 4-7 mils thick, in electrochem. cells. One side of the film was coated with a catalyst, or mixts. of catalyst and a polymer. Heat treatment at 200-320° was not essential but was preferred. The resulting film diffused such gases as O, C3H8, H, but was impermeable to common electrolytes or H2O. The mech. strength and current take-off were improved by using a porous element such as a C plate, a metal screen or mesh. Thus, 135 mg. Pt black and 30 mg. I on I film, 10cm. + 10cm. + 4 mils, were dried at 100° for 30 min. and pretreated at 300° for 30 min. Two such plates with 5N KOH in a H/O cell gave 150 ma./cm.2 at 0.85 v. at 70°. There was no **leakage** after 500 hrs. Similar electrodes used in a **Zn-air battery** gave 125 w. -hr./lb. at the 3-hr. rate.
CC 77 (Electrochemistry)

=> file wpix
FILE 'WPIX' ENTERED AT 14:59:56 ON 03 MAR 2004
COPYRIGHT (C) 2004 THOMSON DERWENT

FILE LAST UPDATED: 2 MAR 2004 <20040302/UP>
MOST RECENT DERWENT UPDATE: 200415 <200415/DW>
DERWENT WORLD PATENTS INDEX SUBSCRIBER FILE, COVERS 1963 TO DATE

>>> FOR A COPY OF THE DERWENT WORLD PATENTS INDEX STN USER GUIDE, PLEASE VISIT:
http://www.stn-international.de/training_center/patents/stn_guide.pdf <<<

>>> FOR DETAILS OF THE PATENTS COVERED IN CURRENT UPDATES, SEE http://thomsonderwent.com/coverage/latestupdates/ <<<

>>> FOR INFORMATION ON ALL DERWENT WORLD PATENTS INDEX USER GUIDES, PLEASE VISIT:
http://thomsonderwent.com/support/userguides/ <<<

>>> ADDITIONAL POLYMER INDEXING CODES WILL BE IMPLEMENTED FROM

DERWENT UPDATE 200403.
THE TIME RANGE CODE WILL ALSO CHANGE FROM 018 TO 2004.
SDIS USING THE TIME RANGE CODE WILL NEED TO BE UPDATED.
FOR FURTHER DETAILS: http://thomsonderwent.com/chem/polymers/ <<<

=> d l28 1-8 max

L28 ANSWER 1 OF 8 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2003-863840 [80] WPIX
DNN N2003-689508 DNC C2003-244122
TI **Metal-air battery** cell **holder**
for, e.g. high-drain portable electronic devices, e.g. cellular telephones, includes foldable **sheet** with first portion that is aqueous-absorbent, and second portion that is insulating and aqueous-impermeable.
DC A85 L03 X16
IN BOGDANOVSKY, V; ROSENBERG, J; SHRIM, Y
PA (EFLE-N) EFL ELECTRIC FUEL LTD
CYC 1
PI US 2003175584 A1 20030918 (200380)* 11p H01M002-10
ADT US 2003175584 A1 US 2002-99711 20020314
PRAI US 2002-99711 20020314
IC ICM H01M002-10
ICS H01M002-12; H01M012-06
AB US2003175584 A UPAB: 20031211
NOVELTY - A **metal-air battery** cell **holder** has a foldable **sheet** with a first portion that is aqueous-absorbent, and a second portion that is insulating and aqueous-impermeable. The **sheet** is folded into a shape defining recess(es) sized and shaped to accommodate an external surface of the cell; and the **sheet** being formed such that, when holding the cell, moisture **leaking** from cell is absorbed by the first portion and isolated by the second portion.
USE - For holding **metal-air battery** cell used in high-drain portable electronic devices, e.g. cellular telephones, notebook computers, camcorders, or cordless hand-tools.
ADVANTAGE - The battery cell **holder** securely holds electrical cells in a **battery pack**. It is made of inexpensive materials and avoids a need for complete **encapsulation** of the cells. It has improved **leak** containment and manufacturing qualities.
DESCRIPTION OF DRAWING(S) - The figure is a drawing of a planar development of a battery **holder**, planar development being folded to form the battery **holder** structure, of the invention.
Dwg.2A/4
TECH US 2003175584 A1UPTX: 20031211

TECHNOLOGY FOCUS - ELECTRICAL POWER AND ENERGY - Preferred Component: The cell includes a **metal-air battery** cell and the **sheet** has air-permeable regions that, when the **sheet** is folded to hold the cell, align with air access openings in the **metal-air battery** cell.

TECHNOLOGY FOCUS - TEXTILES AND PAPER - Preferred Material: The **sheet** includes felt, sponge, cotton cloth, paper or cardboard.

TECHNOLOGY FOCUS - POLYMERS - Preferred Material: The **sheet** includes **layer**(s) of insulating plastic material made of polyethylene, polypropylene, or polystyrene. It may be also a **laminate** including **layer**(s) of aqueous absorbent material and **layer**(s) of impermeable material.

FS CPI EPI
FA AB; GI
MC CPI: A12-E06C; L03-E01D
EPI: X16-A01B; X16-B01D; X16-F06
PLE UPA 20031211
[1.1] 018; R00326 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D82; H0000; H0011-R; S9999 S1285-R; S9999 S1581; P1150; P1161
[1.2] 018; R00964 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D83; H0000; H0011-R; S9999 S1285-R; S9999 S1581; P1150; P1343
[1.3] 018; R00708 G0102 G0022 D01 D02 D12 D10 D19 D18 D31 D51 D53 D58 D76 D88; H0000; H0011-R; S9999 S1285-R; S9999 S1581; P1741; P1752
[1.4] 018; ND01; Q9999 Q7341 Q7330; Q9999 Q7374-R Q7330; Q9999 Q7818-R; B9999 B4035 B3930 B3838 B3747; B9999 B3407 B3383 B3372; B9999 B3270 B3190; B9999 B4864 B4853 B4740; B9999 B4875 B4853 B4740; K9676-R; K9416; K9905; K9518 K9483; K9563 K9483; K9574 K9483

L28 ANSWER 2 OF 8 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2002-187214 [24] WPIX
DNN N2002-141878
TI **Metal-air electrochemical cell** for cellular telephones, has rectangular **tray casing** components whose side walls has height to facilitate curling and crimping of upper portion on major surface of other **casing** component.
DC W01 W04 X16
IN ABRAMSON, M; DOPP, R B; SHRIM, Y
PA (EFLE-N) EFL ELECTRIC FUEL LTD
CYC 1

PI US 6265102 B1 20010724 (200224)* 9p H01M002-02
ADT US 6265102 B1 US 1998-187567 19981105
PRAI US 1998-187567 19981105
IC ICM H01M002-02
AB US 6265102 B UPAB: 20020416
NOVELTY - The metal prismatic **casing** has a pair of interfacing inter-engaging rectangular **tray casing** components (24) which has major surface (26) and contiguous side walls for encompassing a cathode and anode of cell. The side walls of **casing** components has a height to facilitate the curling and crimping of an upper portion over a peripheral edge area of major surface of other **casing** component to form a **leak**-proof, closed prismatic **casing.**

USE - **Metal-air electrochemical cell** e.g. **zinc-air electrochemical cell** used in **battery packs** for powering cellular phones, also used in hearing aids.

ADVANTAGE - Extending the height of side walls changes the direction of sealing force from radial to axial, thus creating more uniform force distribution regardless of the shape of vessel, which controls the pressure on the seal more effectively. The sharp radius of crimp increases grommet compression between the anode and cathode cans, thus producing a tighter, stronger, **leak** resistant seal which more effectively controls KOH creep. The metal prismatic **casing** enables the preparation of cell packs for cellular telephones comprised of primary, low cost, disposable, prismatic zinc-air cells having a capacity in the range of 2-5 Ah.

DESCRIPTION OF DRAWING(S) - The figure shows the top perspective view of prismatic **metal-air electrochemical cell.**

Casing components 24
Major surface 26
Dwg.7/7
FS EPI
FA AB; GI
MC EPI: W01-C01D3C; W01-C01E5B; W04-Y01; X16-A01B; X16-F01

L28 ANSWER 3 OF 8 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2000-452090 [39] WPIX
CR 2000-412491 [35]; 2000-431695 [37]; 2000-431699 [37]; 2000-431700 [37]; 2000-431701 [37]; 2000-431702 [37]; 2000-431703 [37]; 2000-431704 [37]; 2000-452084 [39]; 2000-452085 [39]; 2000-452089 [39]; 2000-465392 [40]; 2000-475423 [41]; 2002-546064 [58]; 2003-016612 [01]
DNN N2000-336618 DNC C2000-137736
TI **Metal-air battery** cells for cellular, mobile telephones, comprises **housing** having outer wall

with one aperture, diffuser, carbon dioxide scrubbing agent, air electrode, two terminals, anode mixture, separator.

DC E36 J01 L03 X16

IN GIVON, M; ROSENBERG, T; SHRIM, Y

PA (EFLE-N) EFL ELECTRIC FUEL LTD

CYC 90

PI WO 2000036687 A1 20000622 (200039)* EN 99p H01M012-06
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2000016777 A 20000703 (200046) H01M012-06

ADT WO 2000036687 A1 WO 1999-IL683 19991215; AU 2000016777 A AU 2000-16777 19991215

FDT AU 2000016777 A Based on WO 2000036687

PRAI US 1999-135061P 19990520; US 1998-112292P 19981215

IC ICM H01M012-06
ICS H01M004-62; H01M008-06

AB WO 200036687 A UPAB: 20030227

NOVELTY - A **metal-air battery** cell (101) comprises **housing** having outer wall with one aperture, diffuser (278) located next to aperture, carbon dioxide scrubbing agent contacted with diffuser, air electrode in contact with air passing through diffuser, terminal (1) connected to air electrode, anode mixture, terminal (2) connected to the mixture and a separator provided between air electrode and mixture.

DETAILED DESCRIPTION - A **metal-air battery** cell comprises a **housing** having an outer wall with at least one aperture through which air can pass, a diffuser located adjacent to the aperture, a carbon dioxide scrubbing agent contacted with the diffuser, an air electrode in contact with the air passing through the diffuser, terminal (1) electrically connected to the air electrode, an anode mixture including electrolyte and metal particles, terminal (2) electrically connected to the mixture and a separator provided between the air electrode and the mixture. The diffuser is positioned such that air passing through the aperture into the cell passes through the diffuser. The separator is in physical contact with the air electrode and the mixture, permits the travel of ions and blocks the metal particles from contacting the air electrode.

INDEPENDENT CLAIMS are also included for:

(i) diffuser for cells which comprises a carbon dioxide scrubbing agent in contact with an air diffusing element;

(ii) the manufacturing method of the diffuser.

USE - For cellular, mobile telephones, computers.

ADVANTAGE - The **metal-air battery**

cells are prismatic and reduce wastage of space, provide high **packaging** density and allows a compact **battery pack**. The cell **housing** has raised portions defining channels for conducting fluid. A liquid impermeable covering positioned over the **housing** prevents intrusion of liquid into the space occupied by the cells. Openings are located on the raised portions, remote from the liquid in channels. Size of the hole enables efficient oxygen supply to the cathode and minimizes moisture loss. The openings in the battery permit oxygen transport into the battery at a rate of 0.04-0.05 cm3 per second. Openings on the battery **case** have a combined area of at least twice the combined area of the openings within the battery **case**. A support provided in the battery **case** has two portions linked by an integral hinge provided with recesses for receiving a respective one of the battery cells. The recess allow the battery cells to expand, preventing distortion of the support. The recesses define **trays** into which the respective battery cells fit. The **trays** are enclosed with an absorbent material which holds any filled substance emerging from the battery cells. A gas permeable membrane is attached to the **tray**, enclosing the battery cells to block an intrusion of liquid into the battery cells. The integral hinge provides at least 180 deg. angular moment between the longitudinal axis of the two supports. Material of the support is sufficiently flexible and accommodates the expansion without permitting the battery cells to become unsupported. Punched out holes in the support have substantially the same width and length as the battery cells to press-fitted the battery cells into the holes. A current limiter connectable between the terminals and the cell prevents over-charging of the battery cell. The diffusing element is formed of a material that allows gas exchange through the element and between the respective battery cells and outside of the **case**. The **package** has an enclosure capable of **encasing** the electrochemical device and is formed of a material that permits diffusion of ambient gas into and out of the enclosure. The enclosure has a moisture permeability of less than 3 mg water/day/300 cm2.

DESCRIPTION OF DRAWING(S) - The figure shows an exploded view of the **battery case** supporting the **metal -air battery** cell.

Metal-air battery cell 101

Gas-exchange wall 104C

Absorbent material 270

Diffuser 272

Trays 271

Hydrophobic plastic **layer** 273

Holes 276

Battery case pack 277

Dwg.34b/50

TECH WO 200036687 A1UPTX: 20000818
TECHNOLOGY FOCUS - ELECTRICAL POWER AND ENERGY - Preferred Device: The diffuser is located inside or outside the cell. The scrubbing agent is finely divides and impregnates into interstices of the diffuser and is coated on the diffuser. Volume of the diffuser is increased to accommodate the scrubber particles.

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Composition: The metal particles include zinc particles. The scrubbing agent includes at least calcium hydroxide, magnesium hydroxide, zinc oxide or soda-lime.
Preferred Properties :The scrubbing agent is hydrophobic. The diffuser is porous. Preferred Method: The scrubbing agent is included in the diffusing element by:
(i) agitating the diffusing element in presence of a scrubbing agent optionally with an adhesive;
(ii) by placing the scrubbing agent and diffusing element in a fluidized bed; or
(iii) forming a solution or suspension of scrubbing agent in a solvent and evaporating the solvent, the scrubbing agent is consequently precipitated into interstices of the diffusing element.
KW [1] 255-0-0-0 CL REM; 89837-0-0-0 CL; 99998-0-0-0 CL; 866-0-0-0 CL; 154189-0-0-0 CL
FS CPI EPI
FA AB; GI; DCN
MC CPI: E11-Q02; E31-N05C; E34-B02; E34-D01; E35-C; J01-E02A; L03-E01B2
EPI: X16-A01B; X16-D01; X16-E09; X16-F01
DRN 1066-U; 1502-U; 1509-U; 1520-U
CMC UPB 20030227
M3 *01* C106 C108 C530 C730 C800 C801 C802 C803 C805 C807 M411 M750 M904 M905 M910 N163 Q431 Q454
DCN: R01066-K; R01066-X
M3 *02* A220 A940 C101 C108 C550 C730 C801 C802 C804 C805 C807 M411 M781 M904 M905 M910 N163 Q431 Q454 Q508 R043
DCN: R01502-K; R01502-R
M3 *03* A212 A940 C101 C108 C550 C730 C801 C802 C804 C805 C807 M411 M781 M904 M905 M910 N163 Q431 Q454 Q508 R043
DCN: R01509-K; R01509-R
M3 *04* A430 A940 C108 C550 C730 C801 C802 C803 C804 C805 C807 M411 M781 M904 M905 M910 N163 Q431 Q454 Q508 R043
DCN: R01520-K; R01520-R
M3 *05* M781 M905 N163 Q431 Q454 Q508 R043
DCN: RA0E00-K; RA0E00-R

L28 ANSWER 4 OF 8 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2000-431709 [37] WPIX
DNN N2000-322142
TI Uniform shell for **metal air battery,**

is a rectangular or cylindrical **sheet** made of air permeable and water impermeable thin film of silicon rubber or **laminated** silicon with specified air permeability rate.

DC X16
IN PEDICNI, C S; PEDICINI, C S
PA (AERE-N) AER ENERGY RESOURCES INC
CYC 22
PI WO 2000036698 A1 20000622 (200037)* EN 18p H01M012-06
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
W: CA JP
US 6235418 B1 20010522 (200130) H01M012-06
EP 1145359 A1 20011017 (200169) EN H01M012-06
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
JP 2002532861 W 20021002 (200279) 31p H01M012-06
ADT WO 2000036698 A1 WO 1999-US30375 19991220; US 6235418 B1 US 1998-216114 19981218; EP 1145359 A1 EP 1999-968508 19991220, WO 1999-US30375 19991220; JP 2002532861 W WO 1999-US30375 19991220, JP 2000-588852 19991220
FDT EP 1145359 A1 Based on WO 2000036698; JP 2002532861 W Based on WO 2000036698
PRAI US 1998-216114 19981218
IC ICM H01M012-06
ICS H01M002-10; H01M008-04
AB WO 200036698 A UPAB: 20000807
NOVELTY - Shell (130) to **house** stack of **metal air battery** (110) and an air mover (120) is rectangular or cylindrical. The shell is made of thin film (135) of **laminated** silicon or silicon rubber or air permeable and water non-permeable material. The silicon rubber film (135) is 0.5-5 mm thick and has an air permeability rate to diffuse 1000-10000 cm3/day oxygen through when a load is placed on the battery (110).

USE - For **metal air battery** cell **pack.**

ADVANTAGE - Offers high isolation ratio without the risk of clogged air passage ways because of specified air permeable rate of material used.

DESCRIPTION OF DRAWING(S) - The figure shows sectional view of **metal air battery** using the uniform shell.

Battery 110
Air mover 120
Uniform shell 130
Rubber film 135
Dwg.3/11

TECH WO 200036698 A1UPTX: 20000807
TECHNOLOGY FOCUS - MATERIAL - The materials for support **layer** are high-density polyethylene (HDPE), ultra-high molecular weight polyethylene (UHMW), polypropylene (PP),

polyvinylidene fluoride (PVDF), polytetrafluoroethylene (PTFE), nylon 6 (N6), polyethersulfone (PES) or ethyl vinyl acetate (EVA).

FS EPI
FA AB; GI
MC EPI: X16-D01; X16-F06

L28 ANSWER 5 OF 8 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2000-431700 [37] WPIX
CR 2000-412491 [35]; 2000-431695 [37]; 2000-431699 [37]; 2000-431701 [37]; 2000-431702 [37]; 2000-431703 [37]; 2000-431704 [37]; 2000-452084 [39]; 2000-452085 [39]; 2000-452089 [39]; 2000-452090 [39]; 2000-465392 [40]; 2000-475423 [41]; 2002-546064 [58]; 2003-016612 [01]
DNN N2000-322133
TI **Packaging bag** for **metal air battery**, is made of flexible, gas and water impermeable plastics and provided with one-way valve to exhaust hydrogen gas from inside of **bag** and prevent oxygen entry into **bag**.
DC X16
IN ABRAMSON, M; GIVON, M; GOLDSTEIN, J; NAIMER, N; ROSENBERG, T; SHRIM, Y; SLUTSKI, M
PA (EFLE-N) EFL ELECTRIC FUEL LTD
CYC 90
PI WO 2000036688 A1 20000622 (200037)* EN 13p H01M012-06
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2000016778 A 20000703 (200046) H01M012-06
US 6517967 B1 20030211 (200314) H01M002-00
ADT WO 2000036688 A1 WO 1999-IL684 19991215; AU 2000016778 A AU 2000-16778 19991215; US 6517967 B1 Provisional US 1998-112292P 19981215, Provisional US 1999-119568P 19990210, US 1999-293927 19990415
FDT AU 2000016778 A Based on WO 2000036688
PRAI US 1999-161767P 19991027; US 1998-112292P 19981215; US 1999-119568P 19990210; US 1999-129666P 19990415; US 1999-293927 19990415
IC ICM H01M002-00; H01M012-06
ICS H01M002-02; H01M002-10; H01M002-12
AB WO 200036688 A UPAB: 20030227
NOVELTY - The **bag** (500) is made of gas and water **impermeable** flexible plastics or **plastic laminates**. An one-way valve (510) is attached airtight around the hole (505) provided in the **bag** to permit exhaust of hydrogen from the **bag** caused by corrosion of

metal electrode and prevent entry of external air into the **bag.**

USE - For **packaging metal air battery** cells.

ADVANTAGE - Prevents bulging and rupture of **bag** as hydrogen generated is exhausted through one-way valve. Enables long time storage as oxygen is not allowed to permeate into the **bag.**

DESCRIPTION OF DRAWING(S) - The figure shows the front elevation and side view of **packaging bag** for **metal air battery** cells.

Bag 500
Hole 505
Valve 510
Dwg.2/2

FS EPI
FA AB; GI
MC EPI: X16-D01; X16-F01; X16-F06

L28 ANSWER 6 OF 8 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1995-130670 [17] WPIX
DNN N1995-102707 DNC C1995-060359
TI Electrolyte **leakage** detector for **zinc-air batteries** - uses **absorbent paper** towelling or nylon or rayon fibres to form conductive bridge between contacts when wetted with **leaking** electrolyte.
DC A85 L03 S02 X16
IN TINKER, L A
PA (AERE-N) AER ENERGY RESOURCES
CYC 1
PI US 5399445 A 19950321 (199517)* 10p H01M010-48
ADT US 5399445 A US 1994-229368 19940418
PRAI US 1994-229368 19940418
IC ICM H01M010-48
AB US 5399445 A UPAB: 19950508
Battery **leakage** detector has electrically conductive liq. in a cell (4a,4b) inside a **housing.** Also within the **housing** is an absorbent (20a,20b,20c) which is electrically non-conductive when dry and conductive when wet. An electric circuit has spaced apart contacts (44) within the absorbent which are connected when the absorbent is wet.

USE - Electrolyte **leakage** detector for **metal -air batteries.**

ADVANTAGE - Detector absorbs **leakage** and detects **leakage** which is not adjacent contacts.

Dwg.3/7

FS CPI EPI

FA AB; GI
MC CPI: A03-A05; A05-F01E2; A12-E06; A12-E13; L03-E01D
EPI: S02-J06A5; X16-H
DRN 1512-U
PLE UPA 19950619
[1.1] 017; G3634-R D01 D03 D11 D10 D23 D22 D31 D42 F24 F34 H0293 P0599 G3623; R24076 R24077 R01852 G3634 G3623 D01 D03 D11 D10 D23 D22 D31 D42 D50 D86 F24 F29 F26 F34 H0293 P0599; S9999 S1070-R
[1.2] 017; P0635-R F70 D01; S9999 S1070-R
[1.3] 017; ND01; K9416; B9999 B3269 B3190; K9905; Q9999 Q7341 Q7330; Q9999 Q7498 Q7330; B9999 B3383-R B3372

L28 ANSWER 7 OF 8 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1993-068383 [09] WPIX
DNN N1993-052484
TI Sales/storage packing for small batteries for hearing aids, etc. - consists of blister card, with integrated adhesive seal for batteries, which remains on card after removal.
DC Q34
IN HEWELT, H; SCHULZ, G
PA (VART) VARTA BATTERIE AG
CYC 7
PI EP 529199 A1 19930303 (199309)* DE 4p B65D075-36
R: BE CH DE FR GB LI
DE 4128248 A1 19930304 (199310) 4p B65D085-42
US 5203455 A 19930420 (199317) 4p B65D073-02
EP 529199 B1 19950517 (199524) DE 5p B65D075-36
R: BE CH DE FR GB LI
DE 59202213 G 19950622 (199530) B65D075-36
ADT EP 529199 A1 EP 1992-106573 19920416; DE 4128248 A1 DE 1991-4128248 19910826; US 5203455 A US 1992-906520 19920630; EP 529199 B1 EP 1992-106573 19920416; DE 59202213 G DE 1992-502213 19920416, EP 1992-106573 19920416
FDT DE 59202213 G Based on EP 529199
PRAI DE 1991-4128248 19910826
REP DE 3630926; US 4015708
IC ICM B65D073-02; B65D075-36; B65D085-42
ICS B65D075-34
AB EP 529199 A UPAB: 19930924
The packing is for small batteries for electronic appliances, pocket calculators, and esp. for hearing aids. It has a carrier, to which the batteries are glued with their bases. The bases have air inlets. Fastened to the carrier (2) is a cover (4) of transparent synthetic, with cup-shaped recesses (5). These are adjusted to the shape of the batteries. For use, the batteries are pressed through the carrier. An additional film (8) is fastened to the carrier, and extends into the area, through which the batteries are pressed. In this area, the

film has a **layer** of adhesive (9), to which the base of the battery adheres. After removal of a battery, the adhesive remains on the carrier. ADVANTAGE - Long storage life, battery cells are activated after removal.
2/3

ABEQ US 5203455 A UPAB: 19931025
The **package** includes a cardboard support to which is sealed a transparent plastics foil with cup-shaped recesses for holding button cells. The battery bases, which are provided with air supply holes, are attached to a shared adhesive foil.
1,2/3

When the battery is pushed through the support, which is perforated in the region for battery removal, the adhesive foil automatically detaches from the battery while remaining an integral part of the **package**.

USE - A push-through, blister card **package** for **zinc-air batteries.**
Dwg.1,2/3

ABEQ EP 529199 B UPAB: 19950626
Sales and storage **package** for zinc/air cells, having a carrier on which the cells are seated by means of their base, which is provided with air entry openings, where a cover (4) which is made of transparent synthetic material and has cup-shaped recesses (5) matched substantially to the shape of the cells is secured to the carrier (2), and where the cells (6) can be pressed through the carrier for use, characterised in that there is secured to the carrier a further film (8) which extends into the regions of the carrier through which the cells can be pressed and which is provided at least there with an adhesive **layer** (9) to which the cells adhere by means of their base and which remains on the carrier after the cells have been pressed through and removed.
Dwg.1/3

FS GMPI
FA AB; GI

L28 ANSWER 8 OF 8 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1975-77584W [47] WPIX
TI Anodes for alkaline batteries - prepd by addn of potassium hydroxide CM -cellulose and sodium polyacrylate power to anode compsn.
DC A85 L03 X16
PA (FJIC) FUJI ELECTROCHEMICAL CO LTD
CYC 1
PI JP 50024733 A 19750317 (197547)*
JP 53020298 B 19780626 (197829)
PRAI JP 1973-75455 19730704
IC H01M004-12; H01M006-04
AB JP 50024733 A UPAB: 19930831
An alk. battery is prepd. by charging the anode compartment with

30-40% KOH, CM-cellulose powder (2-8 of the KOH soln., 1-8% of the anode-active materials), and Na polyacrylate powder (2-7 of the KOH soln., 1-7% of the anode-active material) to give a gel-like anode material. These anode materials can be used with alk. batteries employing air O, Ag2O, HgO, or MnO2 cathodes and Zn or Fe anodes. In an example, a **Zn-air battery** was prepd. by pressing an O-ionizing catalyst on the exterior of a water repellent-treated, hollow C cylinder, wrapping with **absorbent paper** and a separator, placing in a **case** serving as the anode, and filling the **case** with a mixt. of 35% KOH, 7% Zn amalgam 100, CM-cellulose 3, and Na polyacrylate 1-8 parts. The fabrication of the battery was completed in the conventional manner. At 20 degrees, <55-75% humidity, and discharge across a 4-OMEGA resistance, only 2% of the batteries shoed any **leakage** of the electrolyte after 2000 hr. In contrast, batteries prepd. with >40% KOH electrolyte and lesser amts. of CM-cellulose and Na polyacrylate showed a **leakage** rate of 24/100, 78/100, and 100/100 after 500, 1600, and 2000 hr, resp.

FS CPI EPI
FA AB
MC CPI: A03-A04A; A04-F04B; A12-E06; L03-E01B; L03-E02
PLC UPA 19930924
FG: *001* 012 04- 074 076 081 230 231 240 250 252 393 479 60- 623 627 724

=> d l29 1-40 max

L29 ANSWER 1 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2004-131342 [13] WPIX
DNN N2004-104792 DNC C2004-052551
TI Manufacture of solid alkaline polymer electrolyte, involves agitating, heating, copolymerizing and cooling viscous solution, to obtain polymer which is spread on **tray** and maintained at preset temperature and humidity.
DC A11 A14 A25 A85 L03 X16
IN CHIU, J; HUANG, C; LIN, S; YANG, C
PA (MING-N) MING-CHI INST TECHNOLOGY
CYC 1
PI US 2003228522 A1 20031211 (200413)* 31p H01M010-40
ADT US 2003228522 A1 US 2002-219327 20020816
PRAI TW 2002-111828 20020603
IC ICM H01M010-40
ICS H01M004-88; H01M010-26
AB US2003228522 A UPAB: 20040223
NOVELTY - The method involves obtaining polyvinyl alcohol solution and alkaline metal aqueous solution which are mixed to obtain a

viscous solution. The viscous solution is agitated, heated, copolymerized and cooled. The obtained viscous polymer is spread on **tray** and placed in temperature-humidity **chamber** at preset conditions to obtain a solid polymer film which is removed easily when left in atmosphere.

DETAILED DESCRIPTION - The method involves mixing 10-20 wt.% of polyvinyl alcohol (PVA) of molecular weight 2000-120000 with 50-60 wt.% of water under ambient temperature in a closed environment, to obtain a PVA solution. On the other hand, 15-25 wt.% of alkaline aqueous solution is mixed with 10-20 wt.% of water under ambient temperature in a closed environment, to obtain an alkaline metal aqueous solution. The obtained PVA solution and alkaline metal aqueous solution are mixed under ambient temperature to obtain a viscous solution. The viscous solution is fully agitated and heated in a closed **container** at 50-100 deg. C to perform copolymerization blending, and finally cooled in atmosphere to obtain a viscous polymer. The viscous polymer is spread on a carrier **tray** to obtain desired thickness. The **tray** is placed in temperature-humidity **chamber** for 30-60 minutes at 40-80 deg. C and at 20-50 RH%, to obtain a solid state polymer film. The carrier **tray** is left in atmosphere such that the polymer electrolyte film is removed easily. INDEPENDENT CLAIMS are included for the following: (i) process for obtaining electrolytic dendritic zinc powder with high specific surface area. The method involves dissolving 5-15 wt.% zinc oxide powder in alkaline solution at 30-90 deg. C, and electrolyzing into dendritic zinc powder under specific conditions at current density of 20-300 mA/cm2, using nickel plate as negative electrode. The electroplated zinc powder is scraped from the negative electrode, rinsed with ultra-pure water, vibrated ultrasonically and filtered. Rinsing is repeated for 5-10 times and the zinc powder is washed thoroughly to prevent the leftover of electroplating fluid which causes oxidation. The obtained zinc powder is dried, stored in vacuum oven and packed to prevent oxidation, (ii) process for obtaining zinc gel anode. The method involves weighing proper amount of hydrogen inhibitors, adding alkaline metal solution and mixing till the inhibitor distribution is uniform. 1-7 wt.% of dendritic zinc powder is added into the obtained solution and the mixture is vibrated using ultrasonic device. 0.5-10 wt.% of polymer gelling agent is added and mixed uniformly to form a gel, (iii) process for obtaining diffusion layer of air cathode electrode. The method involves weighing proper amount of dispersing agent Triton-X, polytetrafluoroethylene (PTFE) and water, mixing uniformly and introducing the mixture together with the vessel into ultrasonic device. Hydrophobic acetylene carbon powder is weighed, added into the mixture, mixed using ultrasonic device and dried in vacuum oven to remove water completely. The obtained material is ground after drying and weighing the needed quantity according to the size of air cathode electrode. A nickel

screen collector is placed in a die and the material is coated uniformly on nickel screen. The die is placed in a thermal press and the material is sintered. The hot die is placed in a cooler and the diffusion layer is removed after cooling and (iv) process for obtaining air cathode electrode. The method involves weighing hydrophilic carbon powder XC-72R and adding proper amount of catalysts of KMnO4 and MnO2, to obtain solution (I). Preset amount of PTFE-30 and water are mixed uniformly using ultrasonic oscillator, to obtain solution (II). The solutions (I,II) are mixed and vibrated ultrasonically. Preset amount of alcohol solvent is added, agitated and vibrated using ultrasonic device. Required amount of the obtained solution is sprayed on the diffusion layer, air cathode electrode is contacted with active layer and sintering is performed at 320-350 deg. C, followed by cooling under constant pressure to obtain air electrode.

USE - For **zinc-air battery.**

ADVANTAGE - **Leakage** of the battery is prevented. Usage of the battery is environmentally safe. Utilization of zinc in the zinc electrode is increased. The zinc electrode has high power and discharge rate. Size and weight of the battery are reduced.

DESCRIPTION OF DRAWING(S) - The figure shows the flowchart illustrating the preparation of polyvinyl alcohol-GF polymer electrolyte.

Dwg.2/27

TECH US 2003228522 A1UPTX: 20040223

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Solution: The alkaline metal solution is KOH, NaOH, LiOH or its mixture. Preferred Process: Glass fiber cloth with thickness of 20-400 mum is added in the process to enhance mechanical strength and thermo-chemical and electrochemical stability of the solid polymer electrolyte. The optimal condition for temperature/humidity **chamber** is 50degreesC and 30 RH%. The hydrogen inhibitor is zinc oxide, indium acetate, magnesium oxide, calcium oxide or barium oxide.

TECHNOLOGY FOCUS - POLYMERS - Preferred Polymer: The polyvinyl alcohol has average molecular weight of 5000-100000. Polyvinyl alcohol polymer is added with some micro or nanoparticle oxides, such as gamma-Al2O3, TiO2, ZrO2 or SiO2. The polymer gelling agent is carboxy methyl cellulose, polyvinyl alcohol, starch, polyacrylic polymer gelling agent or cellulose. The optimum amount of gelling agent is 1-2 wt.%.

FS CPI EPI

FA AB; GI

MC CPI: A10-E09B; A12-E06A; L03-E01C3

EPI: X16-B01A; X16-B01F; X16-E06

PLE UPA 20040223

[1.1] 2004; P1707 P1694 D01; S9999 S1616 S1605; H0011-R; L9999 L2528 L2506; S9999 S1285-R

[1.2] 2004; ND07; N9999 N5709; N9999 N6177-R; N9999 N5812-R;

B9999 B3554-R; N9999 N5743; B9999 B5094 B4977 B4740
[1.3] 2004; Q9999 Q7341 Q7330; ND01
[1.4] 2004; A999 A793
[1.5] 2004; A999 A704 A691
[2.1] 2004; R00975 G0022 D01 D12 D10 D51 D53 D59 D69 D82 F- 7A; H0000; A999 A793; A999 A782; P0511
[2.2] 2004; R01835 G3678 G3634 D01 D03 D11 D10 D23 D22 D31 D42 D50 D60 D76 D92 F24 F34 F38 F35 H0293 P0599 G3623; A999 A704 A691; A999 A782
[2.3] 2004; P1707 P1694 D01; A999 A704 A691; A999 A782
[2.4] 2004; R01863-R D01 D11 D10 D23 D22 D31 D42 D50 D76 D86 F24 F29 F26 F34 H0293 P0599 G3623; A999 A704 A691; A999 A782
[2.5] 2004; P0088-R; A999 A704 A691; A999 A782
[2.6] 2004; R01852-R G3634 D01 D03 D11 D10 D23 D22 D31 D42 D50 D76 D86 F24 F29 F26 F34 H0293 P0599 G3623; A999 A704 A691; A999 A782

L29 ANSWER 2 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2004-053552 [05] WPIX
DNN N2004-043225 DNC C2004-021672
TI Formation of metal air cell frame useful for electrochemical power sources, involves molding **housing** integrating periphery edges of air diffusion electrode.
DC A85 X16
IN MORRIS, W; TSAI, T
PA (MORR-I) MORRIS W; (TSAI-I) TSAI T; (EVIO-N) EVIONYX INC
CYC 100
PI WO 2003103073 A2 20031211 (200405)* EN 35p H01M000-00
RW: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW
US 2004031143 A1 20040219 (200414) B29B013-00
ADT WO 2003103073 A2 WO 2003-US17356 20030602; US 2004031143 A1 Provisional US 2002-384550P 20020531, US 2003-452833 20030602
PRAI US 2002-384550P 20020531; US 2003-452833 20030602
IC ICM B29B013-00; H01M000-00
AB WO2003103073 A UPAB: 20040120
NOVELTY - A metal air cell frame is formed by, molding a **housing** integrating periphery edges of an air diffusion electrode.
DETAILED DESCRIPTION - Formation of a metal air cell frame comprises molding a **housing** (14) integrating periphery edges of an air diffusion electrode by providing a mold configured

for supporting an air diffusion electrode and configured for providing a space for an anode and an ionic conducting medium; inserting the air diffusion electrode in the mold; inserting a spacer for the space for the anode; and introducing frame constituent material into the mold to produce the metal air cell frame.

USE - For forming a metal air cell frame, useful for electrochemical power sources.

ADVANTAGE - The inventive method forms a metal air cell frame that is structurally robust and prevents electrolyte **leakage**, particularly at the air diffusion electrode.

DESCRIPTION OF DRAWING(S) - The figure shows a metal air cell.

Electrochemical cell 10

Anode structure(14) **Housing** 12

Separator 16

Dwg.1/9

TECH WO 2003103073 A2UPTX: 20040120

TECHNOLOGY FOCUS - POLYMERS - Preferred Material: The frame constituent material comprises urethane that polymerizes in to polyurethane. Preferred Component: The mold is configured for supporting a cathode current collector. Preferred Method: The polyurethane polymerizes in situ at edges of the cathode element. The mold is configured for pour casting, or reaction injection molding. The casting is at ambient temperatures and pressures.

FS CPI EPI

FA AB; GI

MC CPI: A12-E09

EPI: X16-A01B; X16-D01; X16-F01

PLE UPA 20040120

[1.1] 2004; P1592-R F77 D01; S9999 S1434

[1.2] 2004; ND07; N9999 N6508-R N6484 N6440; N9999 N5743; K9472; K9370; Q9999 Q7396 Q7330

L29 ANSWER 3 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

AN 2003-852412 [79] WPIX

DNN N2003-680731

TI Multiple-cell **metal-air battery** for e.g. mobile phone, has controller which provides programmed signals to cell assemblies to control air vents to open to allow penetration of outside air in metal-air cells in programmed manner.

DC T01 U24 W01 X16

IN HUANG, W; LIU, J

PA (HUAN-I) HUANG W; (LIUJ-I) LIU J

CYC 1

PI US 2003186099 A1 20031002 (200379)* 21p H01M012-06

ADT US 2003186099 A1 US 2002-105495 20020326

PRAI US 2002-105495 20020326

IC ICM H01M012-06

ICS H01M002-12
AB US2003186099 A UPAB: 20031208
NOVELTY - The multiple-cell **metal-air battery** has two cell assemblies having respective air vents in the **casings** (86). The air vents are closed during a battery storage period and are opened in response to the programmed signals to allow the outside air to enter the metal-air cells inside the **casings**. A controller regulates the air vents to open at the same time or different times in a programmed manner.
USE - For e.g. mobile phone, laptop computer, palm computer. Used as emergency power source.
ADVANTAGE - Eliminates anode passivation, self-discharge, current **leakage** and anode corrosion. Enables activation of metal-air cells in programmed-timing manner, hence ensuring long service life of battery. Improves utilization of capability of individual cells.
DESCRIPTION OF DRAWING(S) - The figure shows the cross-section of button-shaped metal-air cell wherein anode active material is surrounded by electrolyte.
Anode 72
Porous cathode 74
Air-diffusion membrane 76
Air access portion 80
Casings 86
Dwg.1/10
FS EPI
FA AB; GI
MC EPI: T01-L01; T01-M06A1A; U24-J; W01-C01D3C; W01-C01E5B; X16-D01; X16-F03B

L29 ANSWER 4 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2003-851921 [79] WPIX
DNN N2003-680344 DNC C2003-240047
TI Electrochemical cell includes anode comprising controlled release agent in physical contact to anode active material for tentatively isolating the anode active material from the electrolyte in beginning of cell operation.
DC L03 X16 X21
IN HUANG, J; LIU, J; WU, L
PA (HUAN-I) HUANG J; (LIUJ-I) LIU J; (WULL-I) WU L
CYC 1
PI US 2003162095 A1 20030828 (200379)* 12p H01M004-62
ADT US 2003162095 A1 US 2002-80305 20020222
PRAI US 2002-80305 20020222
IC ICM H01M004-62
AB US2003162095 A UPAB: 20031208
NOVELTY - An electrochemical cell comprises an electrolyte in ionic contact with a cathode and in physical contact with an anode. The

anode comprises a controlled release anode composition that comprises an anode active material and a controlled release agent in physical contact to it for tentatively isolating the anode active material from the electrolyte in the beginning of a cell operation for a delayed oxidation of the anode active material.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a multiple-cell battery assembly comprising several electrochemical cells.

USE - The electrochemical cell is used in a multiple-cell battery assembly useful as energy source for use in electrically-powered vehicles.

ADVANTAGE - The anode material reduces or eliminates the anode passivation, self-discharge, current **leakage**, and/or anode corrosion problems. It has a controlled release function, thus providing an extended cell operating life.

DESCRIPTION OF DRAWING(S) - The figure is a cross-section of a button-shaped metal-air cell, in which the anode active material is surrounded by an electrolyte.

Anode 12
Cathode 14
Air-diffusion membrane 16
Separator 18
Air access port 20
Anode current collectors 22, 24
Steel **casing** 26
Insulating gasket 28
Dwg.1/3

TECH US 2003162095 A1UPTX: 20031208

TECHNOLOGY FOCUS - ELECTRICAL POWER AND ENERGY - Preferred Components: The anode (12) further comprises an initial-stage anode active material in direct contact with the electrolyte. The cathode (14) comprises an oxygen electrode, and the first or initial-stage anode active material comprises a metal element such that the cell constitutes a **metal-air battery**. The anode active material is in a form of fine particles that are coated, plated, embedded, or **encapsulated** with the controlled release agent. It is in a fibrous, plate-like, disc-like, rod-like, or needle-like form which is coated, plated, embedded, or **encapsulated** with the controlled release agent in such a way that the anode active material is separated from the electrolyte during an initial stage of a cell operation. The first anode active material differs in chemical composition from the initial-stage anode active material. The first anode active material is coated or **encapsulated** with the controlled release agent by electroplating, electrode-less coating, electrochemical deposition, physical vapor deposition, chemical vapor deposition, plasma deposition, organic phase separation, surface polymerization, solution coating, solvent casting, fluidized bed coating, thermal

spraying, and/or solution spraying. The controlled release is achieved through desorption, diffusion, erosion, wear or destruction of a barrier material, degradation, chemical reaction, hydrolysis, thermodynamic dissociation, or their combinations. The first anode active material is coated or **encapsulated** with the controlled release agent comprising a metal (e.g. nickel, tin, lead, antimony, bismuth, or indium) with a smaller electromotive force than the first anode active material.

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Materials: The first anode active material comprises a metallic element including lithium, magnesium, aluminum, titanium, manganese, iron, chromium, nickel, or zinc. The initial-stage anode active material comprises zinc.

TECHNOLOGY FOCUS - POLYMERS - Preferred Materials: The controlled release agent contains a polymer, a ceramic, a glass, carbon, an organic, a metallic material, or their combinations.

FS CPI EPI
FA AB; GI
MC CPI: L03-E01B
EPI: X16-E01E; X16-E09; X21-A01F; X21-B01A

L29 ANSWER 5 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2003-742820 [70] WPIX
CR 2002-519488 [55]
DNN N2003-594745 DNC C2003-203955
TI Metal-alkaline battery cell comprises cathode, terminals, separator and mixture comprising electrolyte, metal and polyethylene glycol derivative.
DC A25 A85 E15 L03 W01 X16
IN EIN-ELI, Y; MENACHEM, C; ZINGERMAN, Y
PA (EFLE-N) EFL ELECTRIC FUEL LTD
CYC 1
PI US 6544686 B1 20030408 (200370)* 12p H01M004-06
ADT US 6544686 B1 Provisional US 2000-249852P 20001117, US 2000-718438 20001122
PRAI US 2000-249852P 20001117; US 2000-718438 20001122
IC ICM H01M004-06
ICS H01M004-62; H01M012-06
AB US 6544686 B UPAB: 20031030
NOVELTY - Metal-alkaline battery cell comprises a cathode, terminals (I, II), a separator and a mixture comprising an electrolyte, a metal and a polyethylene glycol (PEG) derivative. Terminals (I, II) are electrically connected to cathode and mixture, respectively. PEG derivative has hydrophilic moiety replacing terminal hydroxyl group(s) of PEG molecule. PEG derivative is PEG bicarboxymethyl ether (PEG BCME).

DETAILED DESCRIPTION - The cathode comprises a catalyst and a conductive material. The electrolyte comprises ion(s).

The separator separates cathode and mixture, and allows ion(s) in electrolyte to travel between the mixture and cathode.

INDEPENDENT CLAIMS are included for the following:

(1) **zinc-air battery** cell, which comprises a mixture containing zinc metal particles; and

(2) manufacture of **metal-air battery** cell, which involves obtaining an air electrode with terminal (I) connected to electrode, mixing an electrolyte, metal particles and PEG BCME to form a mixture, electrically connecting terminal (II) to mixture and positioning a separator between air electrode and mixture.

USE - As **zinc-air** cell **battery** (claimed) used as source of electrochemical energy and used portable electrical devices such as GSM cellular phones.

ADVANTAGE - The metal-alkaline battery has reduced corrosion rate, enhanced electrochemical properties and extended high level of performance. The polyethylene glycol bicarboxy methyl ether completely dissolves in alkaline electrolyte solution. The PEG BCME does not precipitate onto the walls of mixing **container** during preparation of anode mixture. The corrosion inhibitor reduces corrosion and enhances storage life of battery. The production of hydrogen in battery is also reduced and hence swelling, **leaks** and electrical shorts are reduced.

Dwg.0/0

TECH US 6544686 B1 UPTX: 20031030

TECHNOLOGY FOCUS - POLYMERS - Preferred Properties: The concentration of PEG BCME in the mixture is 50-5000 ppm, preferably 200-500 ppm. The PEG BCME has chemical formula: HO2CCH2O-(CH2-CH2-O)n-CH2CO2H,

n = 5-50, preferably 11

The PEG BCME has a molecular weight of 200-2000, preferably 600.

ABEX US 6544686 B1 UPTX: 20031030

EXAMPLE - Zinc-air cell having anode containing polyethylene glycol bicarboxymethyl ether (PEG BCME), potassium hydroxide as electrolyte and indium hydroxide, zinc oxide particles and Carbopol as gelling agent, was constructed. The concentration of PEG BCME having a molecular weight of 600, in the mixture was 200 ppm. The constructed zinc-air cell had high capacity and potential. The cell had reduced corrosion rate, enhanced electrochemical properties and extended high level of performance.

KW [1] 766326-0-0-0 CL USE; 0104-29101 CL USE

FS CPI EPI

FA AB; DCN

MC CPI: A10-E08A; A10-E23; A12-E06; A12-T04C; E10-C02F; L03-E05D1; L03-E05D2

EPI: W01-C01D3C; W01-C01E5B; X16-D01; X16-J02

PLE UPA 20031030
[1.1] 018; R00351 G1558 D01 D23 D22 D31 D42 D50 D73 D82 F47; H0000; P0055; P8004 P0975 P0964 D01 D10 D11 D50 D82 F34; M9999 M2153-R; M9999 M2200; M9999 M2062
[1.2] 018; ND01; Q9999 Q7501; Q9999 Q7341 Q7330; Q9999 Q9234 Q9212; Q9999 Q9289 Q9212; B9999 B5094 B4977 B4740; B9999 B3407 B3383 B3372; B9999 B5652 B3521 B3510 B3372
[2.1] 018; R00446 G0282 G0271 G0260 G0022 D01 D12 D10 D26 D51 D53 D58 D60 D83 F36 F35; H0000; H0011-R; M9999 M2073; P0088; P0099
[2.2] 018; Q9999 Q9347; ND01; Q9999 Q7501; Q9999 Q7341 Q7330; Q9999 Q9234 Q9212; Q9999 Q9289 Q9212
CMC UPB 20031030
M3 *01* H5 H589 H8 J0 J012 J1 J172 M280 M311 M312 M322 M323 M332 M342 M349 M381 M383 M392 M393 M416 M620 M781 M904 M905 N120 Q454 R021
DCN: RABG8D-K; RABG8D-U
M3 *02* H5 H584 H8 J0 J012 J1 J172 M280 M311 M312 M322 M323 M332 M342 M349 M381 M383 M392 M393 M416 M620 M781 M904 M905 N120 Q454 R021
DCN: 0104-29101-K; 0104-29101-U

L29 ANSWER 6 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2003-569615 [53] WPIX
DNN N2003-452926 DNC C2003-153816
TI Reserve **metal air electrochemical cell** structure for e.g. personal computer, has controllable one-way valve for allowing electrolyte in reservoir to enter dry component structure comprising anode and cathode.
DC L03 X16
IN CHU, G; HSU, A; HSU, J; LEE, C M; MORRIS, W F; SOLORZANO, J G; TSAI, T; WAN, L
PA (EVIO-N) EVIONYX INC
CYC 100
PI WO 2003058736 A1 20030717 (200353)* EN 56p H01M006-32
RW: AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE LS LU MC MW MZ NL OA PT SD SE SI SK SL SZ TR TZ UG ZM ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SK SL TJ TM TN TR TT TZ UA UG US UZ VN YU ZA ZM ZW
ADT WO 2003058736 A1 WO 2003-US473 20030108
PRAI US 2002-403605P 20020814; US 2002-346467P 20020108; US 2002-383746P 20020528; US 2002-403521P 20020814
IC ICM H01M006-32
AB WO2003058736 A UPAB: 20030820
NOVELTY - A dry component structure (140) has dry components

including anode and cathode. One end of the structure has a reservoir (150) of electrolyte concentrate. The electrolyte enters the structure through a controllable one-way valve (170b), when liquid e.g. water is added to reservoir, causing electrochemical reaction between anode and cathode.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) a kit for providing energy;
(2) a system for providing energy;
(3) a portable power supply system; and
(4) a method of manufacturing metal air cell.

USE - For use in reserve **metal air electrochemical cell** system for use in portable power supply for **household** appliances, personal computer, notebook computer, television, portable electronics, cellular telephone electric tool and other electrical and electronic devices and in backup system in lighting and communication systems, and as high power sources in backup power system.

ADVANTAGE - There is no deterioration during storage. Controllable one-way valve prevents **leakage**. The structure is rendered active by simply adding water. The structure delivers full power with minimal delay. The valve is controllable by simple action of lever or is automatic.

DESCRIPTION OF DRAWING(S) - The figure shows a portion of the electrolyte flow control device.

Dry component structure 140
Reservoir 150
Controllable one-way valve 170b
Dwg.6B/9

FS CPI EPI
FA AB; GI
MC CPI: L03-E05D2
EPI: X16-A01B; X16-A03

L29 ANSWER 7 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2003-456208 [43] WPIX
CR 2001-529016 [58]; 2002-697209 [75]; 2003-147432 [14]
DNN N2003-362780 DNC C2003-121248
TI Metal-gas cell **battery** e.g. **zinc-air** cell **battery** for electric vehicle, comprises metal-gas cell(s), positive battery terminal electrically connected to gas cathodes and negative battery terminal electrically connected to metal anode.
DC A85 L03 X16 X21
IN YANG, D; YANG, R
PA (YANG-I) YANG D Q; (YANG-I) YANG D; (YANG-I) YANG R
CYC 2
PI US 2003003338 A1 20030102 (200343)* 18p H01M012-06

CN 1459129 A 20031126 (200413) H01M002-08
ADT US 2003003338 A1 CIP of US 2001-681260 20010309, CIP of US 2001-682012 20010709, CIP of US 2001-683120 20011120, US 2002-231878 20020828; CN 1459129 A CN 2002-800557 20020307
PRAI US 2002-231878 20020828; US 2001-681260 20010309; US 2001-682012 20010709; US 2001-683120 20011120
IC ICM H01M002-08; H01M012-06
ICS H01M002-02; H01M002-14; H01M002-18; H01M010-26
AB US2003003338 A UPAB: 20040223
NOVELTY - A metal-gas cell battery comprises metal-gas cell(s) (12), a positive battery terminal electrically connected to gas cathodes (I,II) and a negative battery terminal electrically connected to a metal anode. The cell comprises parallel retaining structures (I,II), gas cathodes (I,II), a soft pocket (24), a soft pocket closing mechanism, a metal anode, protective meshes (I,II) and separator **sheets** (I,II).

DETAILED DESCRIPTION - A metal-gas cell battery comprises metal-gas cell(s), a positive battery terminal electrically connected to gas cathodes (I,II) and a negative battery terminal electrically connected to a metal anode. The metal-gas cell comprises parallel retaining structures (I,II), gas cathodes (I,II), a soft pocket disposed between the cathodes, a soft pocket closing mechanism, a metal anode (28) disposed within a soft pocket **chamber** (26), protective meshes (I,II) and separator **sheets** (I,II).

The structure (II) is proximate to the structure (I) and is movable with respect to the structure (I) between retaining structure positions (I,II). The structure (II) is spaced apart from the structure (I). The cathodes (I,II) are disposed within rigid planar retaining structures (I,II), respectively. The cathode (I) (18) is permeable to gases but impermeable to liquids and the cathode (II) is permeable to air but impermeable to liquids.

The cathodes allow the passage of gases into the cell and the cathode (II) is electrically connected to the cathode (I). The soft pocket has a flexible and planar walls (I,II) having respective top edges. The periphery of the wall (I) is connected to the periphery of wall (II) except along the respective top edges. The periphery of the walls (I,II) are attached to the structures (I,II), respectively. The structures, cathodes and the walls form a liquid retaining soft pocket **chamber** having a lower portion, an upper portion and a top opening (44) between the top edges of the walls. The top opening is open when the structures are in position (II) and tightly closed when the structures are in position (I). The closing mechanism secures the structures in the position (I). The meshes (I,II) are disposed between the cathodes (I,II) and walls (I,II), respectively. The **sheets** (I,II) is permanently installed between the cathodes (I,II) and meshes (I,II), respectively.

INDEPENDENT CLAIMS are also included for the following:
(1) **zinc-air** cell **battery**
containing several internal **zinc-air** cells
between outermost zinc-air cells (I,II), a positive battery terminal electrically connected to air cathodes (I,II) of cell (I) and a negative battery terminal electrically connected to zinc anode of cell (II). Each cell comprises structures (I,II), air cathodes (I,II), soft pocket, soft pocket closing mechanism, zinc anode wholly disposed within a soft pocket **chamber**, protective meshes (I,II), separator **sheets** (I,II) and a semi-permeable membrane. The semi-permeable membrane is in the upper portion of the pocket **chamber** to allow gases to flow out of the upper portion. The membrane is permeable to gases but impermeable to liquids. The anode comprises a planar anode base portion (58) having a lower edge (72) which is shorter in length than upper edge (74), and a tab portion (62). The tab portion in each internal zinc-air cell is electrically connected to air cathodes of adjoining zinc-air cell by a conductor component. The component has a portion in abutment with the tab portion; and
(2) metal-gas cell.
USE - As mechanically rechargeable **metal-air** cell **battery**, such as **zinc-air** cell **battery** (claimed), e.g. for electric vehicle.
ADVANTAGE - The metal-gas cell battery is conveniently recharged by mechanically replacing the metal anode. The battery eliminates expensive and labor-intensive operation of changing and washing the separator **bags**. The battery prevents **leakage** of electrolyte or electrolyte mist and is durable for several refueling operations.
DESCRIPTION OF DRAWING(S) - The figure shows a perspective view of a metal-gas cell.
Metal gas cell 12
Gas cathode (I) 18
Soft pocket 24
Soft pocket **chamber** 26
Metal anode 28
Top opening 44
Support structure 56
Base portion 58
Tab portion 62
Lower edge 72
Upper edge 74
Dwg.2/11

TECH US 2003003338 A1UPTX: 20030707
TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Electrolyte: The cell further contains an electrolyte disposed within the soft pocket **chamber**. The electrolyte is an aqueous solution containing potassium hydroxide, sodium hydroxide or sodium chloride, preferably

potassium hydroxide.

TECHNOLOGY FOCUS - POLYMERS - Preferred Material: The semi-permeable membrane is made of polytetrafluoroethylene. The soft pocket is made of neoprene, ethylene propylene diene monomer, butyl rubber, ethylene propylene copolymer or chlorosulfonated polyethylene. The soft pocket comprises a molded integral piece M-shaped in cross section.

TECHNOLOGY FOCUS - ELECTRICAL POWER AND ENERGY - Preferred Battery: The closing mechanism comprises bolt(s) and nut(s). The metal anode is wholly disposed within the **chamber** and comprises a base portion and a tab portion. The base portion is disposed without an enclosure separator **bag** and is trapezoidal in shape. The gas cathodes (I,II) are air cathodes (I,II), respectively. The metal anode is retained firmly within the pocket by elastic elements when the structures (I,II) are in the position (I). The elastic elements are disposed within the structure (II).
Preferred Material: The **sheets** (I,II) are permanently installed at 0.3-0.5 mm, respectively from the cathodes (I,II) in the cell. The **sheets** are protected by alkaline-resist protective meshes, which are 40-300 mesh, preferably 80-100 mesh. The battery comprises several cells which are electrically connected in series. The peripheries of the walls (I,II) are attached to the structures (I,II), respectively without using glue.

TECHNOLOGY FOCUS - METALLURGY - Preferred Material: The metal anode comprises an electrically conductive support structure (56) to which a metal anode material, preferably zinc, is attached.

FS CPI EPI
FA AB; GI
MC CPI: A12-E06; L03-E01; L03-E01B6
EPI: X16-D01; X16-F01; X16-F02; X21-A01F; X21-B01A
PLE UPA 20030707
[1.1] 018; R00975 G0022 D01 D12 D10 D51 D53 D59 D69 D82 F- 7A; H0000; P0511
[1.2] 018; ND01; K9416; Q9999 Q7341 Q7330
[1.3] 018; Q9999 Q8060; B9999 B4886 B4853 B4740
[2.1] 018; R01079 G0828 G0817 D01 D12 D10 D51 D54 D56 D58 D69 D84 Cl 7A; H0124-R; H0000; P0328; P0340
[2.2] 018; R00326 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D82; R00964 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D83; H0124-R; H0022 H0011; P1150; P1285; P1296
[2.3] 018; R00326 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D82; R00964 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D83; G0817-R D01 D51 D54; H0124-R; H0033 H0011; P1309 H0124; P1150
[2.4] 018; R00966 G0055 G0044 G0033 G0022 D01 D02 D12 D10 D51

D53 D58 D84; R00429 G0828 G0817 D01 D02 D12 D10 D51 D54 D56 D58 D85; H0022 H0011; H0124-R; P1150; P0328; P0431
[2.5] 018; ND01; K9416; Q9999 Q7341 Q7330
[2.6] 018; B9999 B3827 B3747
[3.1] 018; R00326 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D82; H0000; H0124-R; M9999 M2288 M2277; P1150; P1161; P1230
[3.2] 018; ND01; K9416; Q9999 Q7341 Q7330; B9999 B3827 B3747
[3.3] 018; S- 6A Cl 7A; H0157

L29 ANSWER 8 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2003-327096 [31] WPIX
DNN N2003-261426 DNC C2003-085023
TI Catalyst production for use in electrochemical cell, involves using two solutions each comprising solvent and surfactant which is same or different from the solvent and surfactant present in other solution.
DC A85 L03 X16
IN GOLOVIN, N
PA (AERE-N) AER ENERGY RESOURCES INC
CYC 1
PI US 6428931 B1 20020806 (200331)* 7p H01M010-24
ADT US 6428931 B1 US 2000-639476 20000815
PRAI US 2000-639476 20000815
IC ICM H01M010-24
AB US 6428931 B UPAB: 20030516
NOVELTY - Solution (A) of solvent (a), surfactant (b) and manganese (II) salt, and solution (B) of solvent (a'), surfactant (b') and ammonium hydroxide are separately prepared. Solutions (A, B) and activated carbon are mixed, to form precipitate along with micelles. Precipitate is heated to form manganese oxide. Solvent (a) and surfactant (b) are same as or different from solvent (b) and surfactant (b'), respectively.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for the following:

(1) a catalyst formed as above;

(2) an air electrode such as an air cathode (12) for use in a **metal-air electrochemical cell** (10), comprising an active layer comprising a binder/non-**wetting** agent and a manganese based oxygen reduction catalyst (formed by micelle **encapsulation** method) dispersed in an oxygen adsorptive material, and a current collector in contact with the active layer; and

(3) the production of air cathode, involving forming an active layer comprising manganese based oxygen reduction catalyst dispersed throughout oxygen adsorptive material, and positioning a current collector to be in contact with the active layer.

USE - For forming a manganese-based catalyst for an air cathode

of a **metal-air electrochemical cell.**

ADVANTAGE - A catalyst having sub-micron particles which are easily dispersed throughout a catalyst support is provided. Thus, the catalyst particles are uniformly distributed within an electrode.

DESCRIPTION OF DRAWING(S) - The figure shows a partial, cross-sectional, elevation view of a metal-air cell.

Metal-air cell 10

Air cathode 12

Dwg.1/1

TECH US 6428931 B1 UPTX: 20030516

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Solvent: The solvents (a, a') are selected from hexanes, petroleum ether and/or decalin, preferably cyclohexane.

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Surfactant: The surfactants (b,b') are non-ionic surfactants.

Preferred Composition: The solution (A) comprises 10-25 wt.% manganese (II) salt. The solution (B) comprises 10-25 wt.% ammonium hydroxide. The formed catalyst particles are sub-micron particles.

Preferred Layer: The active layer comprises (in wt.%) oxygen reduction catalyst (3-10), oxygen adsorptive material (70-85), and non-**wetting** agent/binder (5-25). The oxygen adsorptive material used for dispersing the catalyst, is a particulate material like carbon black or activated carbon. The active layer comprises additional oxygen reduction catalyst chosen from silver, cobalt oxides, transition metal macrocyclics, spinels, perovskites and their mixtures. The binder/non-**wetting** agent is polytetrafluoroethylene (PTFE).

Preferred Collector: The current collector is nickel-plated screen or nickel expanded metal.

Preferred Process: The precipitate is heated at 450-700degreesC. The solutions (A, B) are each sonicated before admixing. The mixture of solutions (A, B) and activated carbon are sonicated before heating.

Preferred Structure: The air cathode also includes a hydrophobic layer.

ABEX US 6428931 B1 UPTX: 20030516

SPECIFIC COMPOUNDS - The manganese (II) salt is manganese nitrate (Mn(NO3)2). The ammonium hydroxide is tetraethylammonium hydroxide.

EXAMPLE - (In wt.%): solution (A) comprising cyclohexane (59.5), surfactant Igepal 520 (25.5) and manganese nitrate (15), was prepared. The solution was mixed in an ultrasonic bath to form a transparent suspension. The solution (B) comprising cyclohexane (59.5), Igepal 520 (25.5) and tetraethylammonium hydroxide (15) was prepared. The solution (B) was mixed in ultrasonic bath and added to solution (A), to form a black mixture. 19 g of activated carbon per g of manganese (as metal) in solution was added to the mixture, and

the mixture was then sonicated for 30 minutes. A precipitate was isolated from the resulting solution by centrifugation, and then heated at 500degreesC for 2 hours under inert atmosphere to obtain manganese oxide (catalyst). The obtained catalyst was then mixed with high surface area carbon black to form a cathode material. The carbon black is a mixture of Ketjen EC-600JD carbon black (30) having surface area of 1200 m2/g and Shawinigan carbon black (70) having surface area of 70-90 m2/g. The air side of cathode was covered with polytetrafluoroethylene (PTFE) film, and the separator between the air cathode and gelled anode was made of wettable microporous polypropylene 3501 CELGARD. The cathode was formed by dry-press method which comprises pressing of dry active layer against current collector under high temperature. The active layer mixture was formed by mixing carbon black with catalyst and then adding PTFE Teflon 30B to the mixture. The active layer mixture was then dried for 20 hours in a convection oven at 100degreesC and chopped to a particle size of 180 microns in a blender. The current collector was rinsed with methanol and the dried active layer mixture was spread on the collector. The active layer containing catalyst (5), carbon black (75) and PTFE (20), and collector were wrapped in stainless steel foil and placed between the plates of a hot hydraulic press. The current collector and the active layer were then pressed for 15 minutes at 617degreesF and 3300 psig.

FS CPI EPI
FA AB; GI
MC CPI: A12-E09; L03-E01B2
EPI: X16-A01B; X16-E03; X16-E09
PLE UPA 20030516
[1.1] 018; R00975 G0022 D01 D12 D10 D51 D53 D59 D69 D82 F- 7A; H0000; P0511
[1.2] 018; ND01; Q9999 Q6791; Q9999 Q7396 Q7330; K9416; N9999 N6177-R; N9999 N6780-R N6655

L29 ANSWER 9 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2003-147432 [14] WPIX
CR 2001-529016 [58]; 2002-697209 [75]; 2003-456208 [43]
DNN N2003-116403 DNC C2003-037984
TI Metal-gas cell storage **battery**, e.g. **zinc-air** cell storage **battery**, has **battery** cell(s) comprising gas cathodes, soft pocket and metallic anode, positive terminal and negative terminal.
DC A85 L03 X16 X22
IN YANG, D Q; YANG, Y Q; YANG, D; YANG, Y
PA (YANG-I) YANG D Q; (YANG-I) YANG Y Q; (YANG-I) YANG D; (YANG-I) YANG Y
CYC 101
PI US 2002132150 A1 20020919 (200314)* 34p H01M002-12
WO 2002073713 A2 20020919 (200314) EN H01M000-00

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZM ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG UZ VN YU ZA ZM ZW

KR 2003019369 A 20030306 (200345) H01M012-06
US 6630262 B2 20031007 (200374) H01M002-08
EP 1388182 A2 20040211 (200411) EN H01M002-08
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR
CN 1459129 A 20031126 (200413) H01M002-08

ADT US 2002132150 A1 CIP of US 2001-681260 20010313, CIP of US 2001-682012 20010709, US 2001-683120 20011120; WO 2002073713 A2 WO 2002-US6976 20020307; KR 2003019369 A KR 2002-714922 20021107; US 6630262 B2 CIP of US 2001-681260 20010309, CIP of US 2001-682012 20010709, US 2001-683120 20011120; EP 1388182 A2 EP 2002-750581 20020307, WO 2002-US6976 20020307; CN 1459129 A CN 2002-800557 20020307

FDT EP 1388182 A2 Based on WO 2002073713

PRAI US 2001-683120 20011120; US 2001-681260 20010313; US 2001-682012 20010709

IC ICM H01M000-00; H01M002-08; H01M002-12; H01M012-06
ICS H01M002-10; H01M002-14; H01M002-18; H01M010-42

AB US2002132150 A UPAB: 20040302

NOVELTY - A metal-gas cell storage battery has at least one battery cell (12), a positive battery terminal (I) and a negative battery terminal (II). The battery cell has two gas cathodes (18,20), a soft pocket (22), a soft pocket closing mechanism and a metallic anode (24). Terminal (I) is electrically connected to the gas cathodes, and terminal (II) is electrically connected to the metallic anode.

DETAILED DESCRIPTION - A metal-gas cell storage battery has at least one battery cell (12), a positive battery terminal (I) electrically connected to gas cathodes (18,20) of the battery cell, and a negative battery terminal (II) electrically connected to a metallic anode (24) of the battery cell. The battery cell has two gas cathodes. Gas cathode (I) is disposed within a rigid planar retaining structure (I), and is permeable to gases but impermeable to liquids. Gas cathode (I) allows the passage of gases into the cell. Gas cathode (II) is disposed within a rigid planar retaining structure (II), and is permeable to air but impermeable to liquids. Gas cathode (II) allows the passage of gases into the cell. Structure (II) is movable with respect to structure (I) between a retaining structure position. Structure (I) is proximate to structure (II) and another retaining structure position.

Structure (I) is spaced apart from structure (II). Gas cathode (II) is electrically connected to gas cathode (I). A soft pocket

(22) is disposed between the gas cathodes. The soft pocket has flexible and planar walls (I,II). The walls each have a periphery and a central opening. The periphery of the walls have a top edge. The periphery of wall (I) is connected to the periphery of wall (II) except along the respective top edges. The periphery of wall (I) is attached to structure (I) and the periphery of wall (II) is attached to structure (II).

Structure (I), gas cathode (I), walls (I,II), structure (II) and gas cathode (II) cooperate to define a liquid retaining soft pocket **chamber** with a soft pocket lower portion, a soft pocket upper portion and a soft pocket top opening, defined between the top edges of the walls. The soft pocket top opening is open in the other retaining structure position and tightly closed in the first retaining structure position. A soft pocket closing mechanism, for securing the structures in position, is provided in the battery cell. The metallic anode is disposed within the soft pocket **chamber**.

An INDEPENDENT CLAIM is included for **zinc-air** cell storage **battery** with several internal battery cells sandwiched between outermost battery cells (I,II), a positive battery terminal (I) electrically connected to the two air cathodes of outermost battery cell (I), and a negative battery terminal (II) electrically connected to the zinc anode of outermost battery cell (II). The tab portion of the anode in each internal cell is electrically connected to the air cathodes of an adjoining battery cell by a conductor material. The conductor material has a portion which is in abutment with the tab portion of the anode.

USE - As metal-gas cell storage **battery**, particularly mechanically rechargeable **metal-air** cell **batteries** for use in electrically powered cars.

ADVANTAGE - The metal-gas cell storage battery is mechanically refueled by expanding the soft pocket to allow easy removal from the cell of the spent anode and easy insertion into the cell of a fresh anode. The cell battery is conveniently rechargeable by mechanical replacement of anode material. The battery is suitable for rapid refueling and is sufficiently durable for hundreds of refueling operations. The cell battery does not produce electrolyte **leak** or mist.

DESCRIPTION OF DRAWING(S) - The figure shows a perspective view of a metal-gas cell usable in the battery.

Battery cell 12
Gas cathodes 18,20
Soft pocket 22
Metallic anode 24
Semipermeable membrane 124

Dwg.2/32

TECH US 2002132150 A1UPTX: 20030227

TECHNOLOGY FOCUS - ELECTRONICS - Preferred Arrangement: The battery

cell further comprises an electrolyte disposed within the soft pocket **chamber**. The electrolyte is an aqueous solution containing a compound chosen from potassium hydroxide, sodium hydroxide and sodium chloride. A semipermeable membrane (124) is disposed in the soft pocket upper portion to allow gases to flow out of the soft pocket upper portion. The membrane is permeable to gases but impermeable to liquids. The semipermeable membrane is made of polytetrafluoroethylene. The soft pocket closing mechanism comprises at least one strap and one or more bolts and nuts. The top opening comprises expansion restrainers to limit the expansion of the top opening of the soft pocket beyond the retaining structure position. The metallic anode comprises a planar anode base portion and a tab portion. The anode base portion is disposed within an enclosure **bag**. The anode base portion has a lower edge and an upper edge, the lower edge being shorter in length than the upper edge. The anode base portion is trapezoidal in shape. The metallic anode comprises an electrically conductive support structure to which a metallic anode material is attached. The metallic anode material is zinc. The gas cathodes are air cathodes. The metallic anode is retained firmly within the soft pocket by a resilient retaining component. The battery cells are electrically connected in series. The soft pocket comprises a molded integral piece w-shaped in cross-section. The periphery of wall (I) is attached to structure (I) and the periphery of wall (II) is attached to structure (II), by mechanical force without glue.

TECHNOLOGY FOCUS - POLYMERS - Preferred Materials: The semi-permeable membrane disposed in the soft pocket upper portion is made of polytetrafluoroethylene. The soft pocket comprises a fabric reinforced membrane comprising an alkaline-resistant fabric selected from vinylon, nylon, polypropylene, polyethylene, ethylene propylene diene monomer, butyl rubber, ethylene-propylene copolymer and chlorosulfonated polyethylene. The membrane has at least one alkaline-resistant coating comprising neoprene, polypropylene, polyethylene and polyvinyl chloride, on the fabric.

FS CPI EPI
FA AB; GI
MC CPI: A12-E06; L03-E01B
EPI: X16-A01B; X16-D; X16-F02; X16-F03B
PLE UPA 20040302
[1.1] 018; P1707 P1694 D01
[1.2] 018; P0635-R F70 D01
[1.3] 018; H0000; R00326 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D82; P1150; P1161
[1.4] 018; H0000; R00964 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D83; P1150; P1343
[1.5] 018; R00326 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D82; R00964 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58

D83; G0817-R D01 D51 D54; H0033 H0011; H0124-R; P1309 H0124; P1150
[1.6] 018; R00966 G0055 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D84; R00429 G0828 G0817 D01 D02 D12 D10 D51 D54 D56 D58 D85; H0022 H0011; H0124-R; P1150; P0328; P0431
[1.7] 018; R00326 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D82; R00964 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D83; H0022 H0011; H0124-R; P1150; P1285; P1296
[1.8] 018; R01079 G0828 G0817 D01 D12 D10 D51 D54 D56 D58 D69 D84 Cl 7A; H0000; H0124-R; P0328; P0340
[1.9] 018; R00338 G0544 G0022 D01 D12 D10 D51 D53 D58 D69 D82 Cl 7A; H0000; P1796 P1809
[1.10] 018; ND01; K9416; K9676-R; K9518 K9483; B9999 B4580 B4568; Q9999 Q7341 Q7330; B9999 B4875 B4853 B4740; Q9999 Q8060
[2.1] 018; R00326 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D82; H0000; M9999 M2288 M2277; P1150; P1161
[2.2] 018; ND01; K9416; K9676-R; K9518 K9483; B9999 B4580 B4568; Q9999 Q7341 Q7330; B9999 B4875 B4853 B4740; Q9999 Q8060
[2.3] 018; S- 6A Cl 7A; H0157

L29 ANSWER 10 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2003-030908 [03] WPIX
DNN N2003-024457
TI Method for preventing liquid **leakage** of **zinc-air battery.**
DC X16
IN YU, D; ZHOU, X; ZHOU, Z
PA (UYHU-N) UNIV HUANAN SCI & ENG
CYC 1
PI CN 1366356 A 20020828 (200303)* H01M002-00
ADT CN 1366356 A CN 2001-129823 20011030
PRAI CN 2001-129823 20011030
IC ICM H01M002-00
ICS H01M012-02; H01M012-06
AB CN 1366356 A UPAB: 20030113
NOVELTY - The invention relates to a method for **leak**-proof liquid of **zinc air battery.** Resin layer with water absorbing capacity is set up on inside of battery **container** to totally absorb leaked liquid in the battery. Thus electrolyte will not **leak** to the outside of battery **container.** The invented method not only increases discharging current of battery, but also prevent electrical appliance, which uses battery, from damage caused by corrosion of leaked liquid.
Dwg.0/0
FS EPI
FA AB
MC EPI: X16-A01B; X16-D01; X16-F09

L29 ANSWER 11 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2002-697209 [75] WPIX
CR 2001-529016 [58]; 2003-147432 [14]; 2003-456208 [43]
DNN N2002-549685 DNC C2002-197382
TI Mechanically rechargeable **zinc-air** **battery** for vehicle, comprises zinc anode which is provided in electrolyte **chamber** defined by air cathodes, cathode retainers and soft pocket arranged between cathodes.
DC A85 L03 X16 X22
IN YANG, D Q; YANG, Y Q
PA (YANG-I) YANG D Q; (YANG-I) YANG Y Q
CYC 27
PI US 2001041276 A1 20011115 (200275)* 18p H01M012-06
EP 1388182 A2 20040211 (200411) EN H01M002-08
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR
ADT US 2001041276 A1 US 2001-682012 20010709; EP 1388182 A2 EP 2002-750581 20020307, WO 2002-US6976 20020307
FDT EP 1388182 A2 Based on WO 2002073713
PRAI US 2001-682012 20010709; US 2001-681260 20010309; US 2001-683120 20011120
IC ICM H01M002-08; H01M012-06
ICS H01M002-14; H01M002-18
AB US2001041276 A UPAB: 20040213
NOVELTY - Two air cathodes are positioned within respective movable retainers. A soft pocket is positioned between the cathodes. The cathodes, flexible planar walls of the pocket and the retainers form a electrolyte containing **chamber** in which a zinc anode (24) is positioned.

DETAILED DESCRIPTION - A semi-permeable PTFE membrane impermeable to liquids, is positioned in the soft pocket upper portion, to flow out the gases. Several straps secure the cathode retainers in their respective positions. Expansion retainers limit expansion of the top opening of the soft pocket beyond a specific retaining position. The anode which is firmly retained within the soft pocket by a resilient retainer, has a trapezoidal base portion (72) positioned within an enclosure **bag** (78) and a zinc support structure (64). An anode tab (68) of each cell is electrically connected to the cathodes of adjacent cells by a conductor which abuts the tab.

USE - Mechanically rechargeable **zinc-air** **battery** for vehicle.

ADVANTAGE - The battery is rechargeable by mechanical replacement of the anode. The battery does not **leak** electrolyte or electrolyte mist and is suitable for rapid refueling and is durable for several refueling operation.

DESCRIPTION OF DRAWING(S) - The figure shows a perspective view

of anode of the zinc-gas battery.
Zinc anode 24
Zinc support structure 64
Anode tab 68
Trapezoidal base portion 72
Enclosure **bag** 78
Dwg.3/14
TECH US 2001041276 A1UPTX: 20021120
TECHNOLOGY FOCUS - POLYMERS - Preferred Components: The soft pocket comprises an alkaline-resistant reinforced fabric selected from vinylon, nylon, polypropylene and polyethylene. The alkaline-resistant coating on the fabric is selected from the group consisting of neoprene, polypropylene, polyethylene and PVC.

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Electrolyte: The electrolyte is selected from potassium and sodium hydroxides and sodium chloride.
FS CPI EPI
FA AB; GI
MC CPI: A04-E08; A12-E06B; A12-W11A; L03-E05D; L03-E05D1; L03-E05D2
EPI: X16-D01; X16-E06C1; X22-F01
PLE UPA 20030707
[1.1] 018; R00975 G0022 D01 D12 D10 D51 D53 D59 D69 D82 F- 7A; H0000; S9999 S1285-R; P0511
[1.2] 018; ND01; K9416; Q9999 Q7341 Q7330; Q9999 Q9289 Q9212
[1.3] 018; Q9999 Q8060; B9999 B4886 B4853 B4740
[2.1] 018; P1707 P1694 D01; S9999 S1161-R S1070
[2.2] 018; P0635-R F70 D01; S9999 S1161-R S1070
[2.3] 018; R00326 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D82; R00964 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D83; H0000; P1150; P1161; P1343
[2.4] 018; ND01; K9416; Q9999 Q7341 Q7330; Q9999 Q9289 Q9212
[2.5] 018; B9999 B5447 B5414 B5403 B5276
[2.6] 018; K9574 K9483; K9676-R
[3.1] 018; R00326 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D82; R00964 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D83; R01079 G0828 G0817 D01 D12 D10 D51 D54 D56 D58 D69 D84 Cl 7A; R00338 G0544 G0022 D01 D12 D10 D51 D53 D58 D69 D82 Cl 7A; H0000; P1150; P0328; P1796 P1809; P0340; P1161; P1343
[3.2] 018; ND01; K9416; Q9999 Q7341 Q7330; Q9999 Q9289 Q9212
[3.3] 018; K9712 K9676; K9518 K9483
[3.4] 018; K9574 K9483; K9676-R

L29 ANSWER 12 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2002-627430 [67] WPIX
DNN N2002-496136 DNC C2002-177002
TI **Electrochemical cell** used in alkaline and

metal-air battery, has hydrogen selective membrane permeable to hydrogen, associated with outlet of **housing**.

DC A85 L03 X16
IN BOWDEN, W L; PAPPAS, D L; TREGER, J; WEI, G
PA (GILL) GILLETTE CO
CYC 99
PI WO 2002059990 A2 20020801 (200267)* EN 18p H01M002-12
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZM ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZM ZW
ADT WO 2002059990 A2 WO 2001-US47040 20011116
PRAI US 2000-717714 20001121
IC ICM H01M002-12
AB WO 200259990 A UPAB: 20021018
NOVELTY - Hydrogen selective membrane (6) selectively permeable to hydrogen relative to carbon dioxide is associated with outlet (8) of an **housing** (10).

USE - Used in alkaline and **metal-air battery**.

ADVANTAGE - The hydrogen permeable membrane permits hydrogen gas to exit the electrochemical cell and hence the cells have less internal pressure from the hydrogen gas and have less **leakage**. The membrane reduces damage to cathode and voltage loss in the cell by reducing the internal pressure. Electrolyte **leakage** is reduced or eliminated. The rupturing pressure of a seal between anode and cathode portions of the **housing** is also reduced by the reduced internal pressure.

DESCRIPTION OF DRAWING(S) - The drawing shows a cross-sectional view of the electrochemical cell.

hydrogen selective membrane 6
outlet 8
housing 10
Dwg.1/2
TECH WO 200259990 A2UPTX: 20021018
TECHNOLOGY FOCUS - POLYMERS - The substrate layer comprises polytetrafluoro ethylene, polyimide, polyamide, styrene-butadiene or styrene polyisoprene block co-polymer, polypropylene, polysulfone, polydimethylsiloxane or polytrimethylsilylpropyne. The hydrogen selective membrane comprises planarizing polymers such as silicone, urethane or an acrylic polymer.

TECHNOLOGY FOCUS - METALLURGY - The hydrogen transportation layer comprises Pt, Pd, Ta, Nb, Rh, V, Zr, Ag, Ab5 misch metals, AB2 misch

metals and alloys.
FS CPI EPI
FA AB; GI
MC CPI: A12-E06B; L03-E01A
EPI: X16-A01B; X16-B01A; X16-D01; X16-F03B
PLE UPA 20021018
[1.1] 018; P1445-R F81 Si 4A
[1.2] 018; P1592-R F77 D01
[1.3] 018; P0088-R
[1.4] 018; ND01; Q9999 Q7341 Q7330; Q9999 Q7396 Q7330; K9698 K9676; K9416
[1.5] 018; Q9999 Q8060; B9999 B4875 B4853 B4740
[2.1] 018; R00975 G0022 D01 D12 D10 D51 D53 D59 D69 D82 F- 7A; H0000; P0511
[2.2] 018; P1081-R F72 D01
[2.3] 018; P0635-R F70 D01
[2.4] 018; R00708 G0102 G0022 D01 D02 D12 D10 D19 D18 D31 D51 D53 D58 D76 D88; R00806 G0828 G0817 D01 D02 D12 D10 D51 D54 D56 D58 D84; H0022 H0011; P0328; P1741; P0351
[2.5] 018; R00708 G0102 G0022 D01 D02 D12 D10 D19 D18 D31 D51 D53 D58 D76 D88; R00429 G0828 G0817 D01 D02 D12 D10 D51 D54 D56 D58 D85; H0022 H0011; H0044-R H0011; P0328; P1741; P0395; P0419
[2.6] 018; R00964 G0044 G0033 G0022 D01 D02 D12 D10 D51 D53 D58 D83; H0000; P1150; P1343
[2.7] 018; P1490-R F61 D01
[2.8] 018; P1456 P1445 F81 F86 D01 D11 D50 D82 Si 4A
[2.9] 018; G2288 G2277 G2266 D01 Si 4A D52 D51 D86 F86; P1423 F88 Si 4A
[2.10] 018; ND01; Q9999 Q7341 Q7330; Q9999 Q7396 Q7330; K9698 K9676; K9416
[2.11] 018; B9999 B5243-R B4740; B9999 B5221 B4740

L29 ANSWER 13 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2002-463512 [49] WPIX
DNN N2002-365401
TI **Leak**-proof **casing** for **metal-air battery** cell has second **casing** element mutually engages with first **casing** element to form an enclosure.
DC X16
IN BOGDANOVSKY, V; EIN-ELI, Y; SHRIM, Y
PA (EFLE-N) EFL ELECTRIC FUEL LTD
CYC 98
PI WO 2002039515 A2 20020516 (200249)* EN 55p H01M002-00
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ

DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP
KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ
NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA
UG US UZ VN YU ZA ZW

AU 2002014191 A 20020521 (200260) H01M002-00

ADT WO 2002039515 A2 WO 2001-IB2124 20011113; AU 2002014191 A AU 2002-14191 20011113

FDT AU 2002014191 A Based on WO 2002039515

PRAI US 2000-711035 20001113

IC ICM H01M002-00

AB WO 200239515 A UPAB: 20020802

NOVELTY - A first **casing** (102) element is in electrical communication with an anode (122) of a metal-air cell (100) and being made at least partly of brass. A second **casing** element (104) may be mutually engaged with the first **casing** element to form an enclosure.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for: (a) a method of forming a **leak**-proof **casing** for **housing** the internal components of a battery cell

USE - In **leak**-proof structures for prism-shaped and button-shaped **electrochemical metal-air cells.**

ADVANTAGE - Makes the **casing** strong, unlikely to deform, and **leak** electrolyte. Makes the battery cell more reliable, inexpensive and easy in mass manufacturing.

DESCRIPTION OF DRAWING(S) - The drawing shows a cross-section representation of a prism shaped battery cell according to one embodiment of the present invention.

metal-air cell 100

first **casing** 102

second **casing** element 104

Dwg.8a/44

FS EPI

FA AB; GI

MC EPI: X16-D01; X16-F01A; X16-F01F1; X16-F01F3

L29 ANSWER 14 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

AN 2002-109934 [15] WPIX

DNN N2002-081945

TI Flat-shaped air battery for pager, has thin protrusion in side wall of cathode **container**, which is extended towards anode **container.**

DC X16

PA (RAYN) TOSHIBA BATTERY CO LTD

CYC 1

PI JP 2001297802 A 20011026 (200215)* 5p H01M012-06

ADT JP 2001297802 A JP 2000-111741 20000413

PRAI JP 2000-111741 20000413

IC ICM H01M012-06
ICS H01M002-02; H01M002-04
AB JP2001297802 A UPAB: 20020306
NOVELTY - A thin protrusion (1b) formed in the side wall of the cathode **container** (1), is extended towards an anode **container** (7). Outer wall of the anode **container** is sealed by caulking, with a gasket (4).
USE - E.g. **air zinc battery** for hearing aid, pager, etc.
ADVANTAGE - Prevents **leakage** by improving sealing through simple arrangement.
DESCRIPTION OF DRAWING(S) - The figure shows a sectional view of the air battery.
Cathode **container** 1
Thin protrusion 1b
Gasket 4
Anode **container** 7
Dwg.2/5
FS EPI
FA AB; GI
MC EPI: X16-A01B; X16-D; X16-F01

L29 ANSWER 15 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2002-106955 [15] WPIX
DNN N2002-079488
TI Cylindrical alkali primary **zinc air battery** and its making process.
DC X16
IN ZHOU, X; ZHOU, Z
PA (UYSC-N) UNIV SOUTH CHINA SCI & ENG
CYC 1
PI CN 1318877 A 20011024 (200215)* H01M012-06
ADT CN 1318877 A CN 2001-107418 20010107
PRAI CN 2001-107418 20010107
IC ICM H01M012-06
AB CN 1318877 A UPAB: 20020306
NOVELTY - The battery consists of the central current collecting needle, zinc paste around the needle, air electrode, diaphragm separating zinc paste and air electrode, **casing**, top cover, positive pole contact, lower cover and negative pole contact. Its making process includes manufacture of air electrode, zinc electrode, diaphragm and **casing**, and assembling of battery. The adhesive of the present invention has improved adhesion performance between air electrode and seeding plastic button and makes the battery sealed without **leakage**.
Dwg.0/0
FS EPI
FA AB

MC EPI: X16-A01B; X16-D

L29 ANSWER 16 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2001-589643 [66] WPIX
DNN N2001-439228 DNC C2001-174782
TI Cartridge for **metal-air** or **zinc-air batteries** useful in devices, e.g. cellular phones, comprises first **casing** having wall, and second **casing** having outer and inner walls.
DC A85 W01 X16
IN PEDICINI, C S; WITZIGREUTER, J D
PA (GILL) GILLETTE CO
CYC 95
PI WO 2001052333 A2 20010719 (200166)* EN 19p H01M002-00
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SL SZ TR TZ UG ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CR CU CZ DE DK DM DZ EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2001027895 A 20010724 (200166) H01M002-00
US 6461763 B1 20021008 (200269) H01M002-00
EP 1252666 A2 20021030 (200279) EN H01M002-02
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR
CN 1395748 A 20030205 (200334) H01M002-02
JP 2003520395 W 20030702 (200352) 26p H01M002-02
ADT WO 2001052333 A2 WO 2001-US1133 20010112; AU 2001027895 A AU 2001-27895 20010112; US 6461763 B1 US 2000-482374 20000113; EP 1252666 A2 EP 2001-902052 20010112, WO 2001-US1133 20010112; CN 1395748 A CN 2001-803685 20010112; JP 2003520395 W JP 2001-552454 20010112, WO 2001-US1133 20010112
FDT AU 2001027895 A Based on WO 2001052333; EP 1252666 A2 Based on WO 2001052333; JP 2003520395 W Based on WO 2001052333
PRAI US 2000-482374 20000113
IC ICM H01M002-00; H01M002-02
ICS H01M002-04; H01M002-08; H01M006-08; H01M012-06
AB WO 200152333 A UPAB: 20011113
NOVELTY - A cartridge (20) comprises a first **casing** (30) having a wall (130); and a second **casing** (40) having an outer wall with a height, and an inner wall with a height less than that of the outer wall. The walls of the second **casing** are spaced for receiving the wall of the first **casing**.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method of assembling a battery, comprising placing a cathode in the first **casing**; placing an anode material (90) in the second **casing**; and sealing the first and second

casings together, such that the wall of the first **casing** is received between the walls of the second **casing.**

USE - For a **metal-air** or **zinc air battery** (claimed) useful in devices, e.g. cellular phones.

ADVANTAGE - The invention provides good protection against **leakage** of battery material, and provides a simple two-piece design. The design helps to minimize production cost, and simplifies the manufacturing and assembling process.

DESCRIPTION OF DRAWING(S) - The figure shows an exploded view of a **metal-air battery.**

Cartridge 20
First **casing** 30
Second **casing** 40
Sealant 60
Absorbent layer 70
Cathode 80
Anode material 90
Wall 130
Recessed area 170

Dwg.1/8

TECH WO 200152333 A2UPTX: 20011113

TECHNOLOGY FOCUS - ELECTRICAL POWER AND ENERGY - Preferred Components: The wall of the first **casing** extends entirely around the periphery of the first **casing.** The outer wall of the second **casing** extends entirely around the periphery of the second **casing.** The inner wall of the second **casing** extends around the second **casing.** The first **casing** includes a projection on an end of the wall, and an area recessed from an interior surface of the first **casing** , and the cathode (80) disposed on the interior surface of the cathode **casing.** The battery and the cartridge are prismatic, and shaped as a rectangular prism. The cartridge includes seal(s) between the first and second **casings.** The seal includes a first seal between an end of the wall of the first and second **casings,** and a second seal located in a channel between the outer wall of the second **casing** and the wall of the first **casing.** The first seal is an ultrasonically welded seal. The end of the wall of the first **casing** has a projection that is an energy director. The battery includes an absorbent layer (70) disposed in the recessed area (170). The cathode is compressed against an end of the inner wall of the second **casing** when the **casings** are assembled together. A sealant (60) is placed on end of the inner wall of the second **casing.**

TECHNOLOGY FOCUS - POLYMERS - Preferred Component: The cartridge and the battery include a thermoplastic polymer. The second seal is an

adhesive that is an epoxy-potting compound.
FS CPI EPI
FA AB; GI
MC CPI: A99-A
EPI: W01-C01D3C; W01-C01E5B; X16-A01B; X16-D01; X16-F01

L29 ANSWER 17 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2001-529016 [58] WPIX
CR 2002-697209 [75]; 2003-147432 [14]; 2003-456208 [43]
DNN N2001-392616 DNC C2001-157726
TI Metal-gas cell storage **battery**, e.g. **zinc-air battery** for vehicles, includes **battery** cell having gas cathodes, soft pocket, strap, and metallic anode.
DC A85 L03 X16
IN YANG, D Q; YANG, Y Q
PA (YANG-I) YANG D Q; (YANG-I) YANG Y Q
CYC 27
PI US 2001009735 A1 20010726 (200158)* 16p H01M010-34
EP 1388182 A2 20040211 (200411) EN H01M002-08
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI TR
ADT US 2001009735 A1 US 2001-681260 20010309; EP 1388182 A2 EP 2002-750581 20020307, WO 2002-US6976 20020307
FDT EP 1388182 A2 Based on WO 2002073713
PRAI US 2001-681260 20010309; US 2001-682012 20010709; US 2001-683120 20011120
IC ICM H01M002-08; H01M010-34
ICS H01M002-12; H01M002-14; H01M010-26; H01M010-52
AB US2001009735 A UPAB: 20040213
NOVELTY - A metal-gas cell storage battery has battery cell(s) with gas cathodes, soft pocket, strap (26), and metallic anode (30).

DETAILED DESCRIPTION - A metal-gas cell storage battery comprises battery cell(s), a positive first battery terminal electrically connected to the two gas cathodes, and a negative second battery terminal electrically connected to the metallic anode.

The battery cell comprises a first and a second gas cathode, a soft pocket, a strap, and a metallic anode.

The first gas cathode is disposed within a rigid planar first retaining structure (14). It is permeable to gases but impermeable to liquids, and allows the passage of gases into the cell.

The second gas cathode is disposed within a rigid planar second retaining structure. It is permeable to air but impermeable to liquids, and allows the passage of gases into the cell. The second gas cathode is electrically connected to the first gas cathode.

The soft pocket is disposed between the first and the second gas cathodes. It has flexible and planar first and second walls.

The first wall has a periphery and a central opening. The

periphery of the walls includes a top edge.

The second wall has a periphery and a central opening. The periphery of the first wall is connected to the periphery of the second wall except along the respective top edges.

The periphery of the first wall is attached to the first retaining structure. The periphery of the second wall is attached to the second retaining structure.

The retaining structures, the gas cathodes, and the walls cooperate to define a liquid retaining soft pocket **chamber** (60) having a soft pocket lower and upper portions, and a soft pocket top opening in between the top edges of the walls.

The top opening is open in the second retaining structure position and tightly closed in the first retaining structure. The soft pocket closing mechanism secures the retaining structures in the first retaining structure position.

USE - The metal-gas cell storage **battery**, e.g. **zinc-air battery** is used for vehicles.

ADVANTAGE - The invention provides a metal-gas cell battery that is suitable for rapid refueling and which is sufficiently durable for hundreds of refueling operations. It also provides a metal-gas cell battery that does not **leak** electrolyte or electrolyte fumes.

DESCRIPTION OF DRAWING(S) - The figure is a perspective view of a metal-gas cell storage battery.

First retaining structure 14

Strap 26

Metallic anode 30

Conductive support structure 54

Anode base portion 56

Anode tab portion 58

Liquid retaining soft pocket **chamber** 60

Dwg.1/9

TECH US 2001009735 A1UPTX: 20011010

TECHNOLOGY FOCUS - ELECTRICAL POWER AND ENERGY - Preferred Components: The battery cell comprises an electrolyte disposed within the soft pocket **chamber**. A semi-permeable membrane is disposed in the soft pocket upper portion to allow gases to flow out of the soft pocket upper portion, the semi-permeable membrane being permeable to gases but being impermeable to liquids. The top opening comprises expansion restrainers to limit the expansion of the top opening of the soft pocket beyond the first retaining structure position. The metallic anode comprises a planar anode base portion (56) that is disposed within an enclosure **bag**. The anode base portion has a lower edge that is shorter than the length of its upper edge. The metallic anode comprises an electrically conductive support structure (54) to which is attached a metallic anode material. The battery comprises internal cells sandwiched between a first and a second outermost cell. The tab portion (58) of

the anode in each internal cell is electrically connected to the gas cathodes of an adjoining cell by a conductor member. The conductor member has a portion that is in abutment with the tab portion of the anode.

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Component: The electrolyte is an aqueous solution containing compounds of potassium hydroxide, sodium hydroxide, or sodium chloride. The metallic anode material is zinc.

TECHNOLOGY FOCUS - POLYMERS - Preferred Material: The semi-permeable membrane is made of polytetrafluoroethylene.

FS CPI EPI
FA AB; GI
MC CPI: A99-A; L03-E01B6; L03-E01D
EPI: X16-B01A; X16-B01X; X16-B09; X16-F03B

L29 ANSWER 18 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2000-465392 [40] WPIX
CR 2000-412491 [35]; 2000-431695 [37]; 2000-431699 [37]; 2000-431700 [37]; 2000-431701 [37]; 2000-431702 [37]; 2000-431703 [37]; 2000-431704 [37]; 2000-452084 [39]; 2000-452085 [39]; 2000-452089 [39]; 2000-452090 [39]; 2000-475423 [41]; 2002-546064 [58]
DNN N2000-347411 DNC C2000-140051
TI **Leak**-proof **casing** for preventing electrolyte **leakage** in electrochemical cell has two **casing** elements forming an enclosure, a sealing element, and an engagement between the **casing** elements.
DC A85 L03 X16
IN ABRAMSON, M; DOPP, R B; SHRIM, Y
PA (EFLE-N) EFL ELECTRIC FUEL LTD
CYC 90
PI WO 2000036668 A1 20000622 (200040)* EN 49p H01M002-08
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2000032064 A 20000703 (200046) H01M002-08
ADT WO 2000036668 A1 WO 1999-US28421 19991201; AU 2000032064 A AU 2000-32064 19991201
FDT AU 2000032064 A Based on WO 2000036668
PRAI US 1999-293458 19990415; US 1998-112292P 19981215
IC ICM H01M002-08
ICS H01M002-02; H01M012-06
AB WO 200036668 A UPAB: 20021212
NOVELTY - **Leak**-proof **casing** for an

electrochemical cell comprises two **casing** elements shaped to be engageable to form an enclosure, a sealing element, and an engagement between the **casing** elements to produce pressure on an element's protrusion. The protrusion faces the sealing element, circumscribes an enclosure's perimeter and amplifies pressure in its vicinity to improve sealing effect.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a **metal-air electrochemical cell** having a **leak**-proof **casing**.

USE - For the prevention of electrolyte **leakage**.

ADVANTAGE - The protrusions experience greater stress than other portions of the grommet (130). This greater stress results in greater deformation which improves the seal of the battery cell. The **casing** is strong and unlikely to deform and **leak**. The battery cell becomes more reliable, inexpensive and can be mass-manufactured. Unwanted deformation or bulging of the battery cells is reduced or prevented.

DESCRIPTION OF DRAWING(S) - The figure shows a cross-section representation of a prism-shaped battery cell.

Casing elements 102, 104

Air cathode 124

Grommet/Sealing element 130

Dwg.8A/39

TECH WO 200036668 A1UPTX: 20000823

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Sealing Element: The sealing element is a tar-based liquid.

TECHNOLOGY FOCUS - POLYMERS - Preferred Sealing Element: The sealing element has a layer of compressed Teflon (RTM).

TECHNOLOGY FOCUS - ELECTRICAL POWER AND ENERGY - Preferred Cell: The metal-air cell further comprises an air cathode (124) between the **casing** elements (102, 104) and attached to the sealing element to form a sealing element cathode combination which is disposed such that the sealing element is pressed against one of the **casing** elements to form a seal.

FS CPI EPI

FA AB; GI

MC CPI: A12-E06C; L03-E01D; L03-E05

EPI: X16-A01B; X16-D01; X16-F01A

PLE UPA 20021212

[1.1] 018; R00975 G0022 D01 D12 D10 D51 D53 D59 D69 D82 F- 7A; H0000; P0511

[1.2] 018; ND01; K9416; Q9999 Q7341 Q7330; Q9999 Q9018; B9999 B4864 B4853 B4740; B9999 B4024 B3963 B3930 B3838 B3747

L29 ANSWER 19 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

AN 2000-431701 [37] WPIX

CR 2000-412491 [35]; 2000-431695 [37]; 2000-431699 [37]; 2000-431700 [37]; 2000-431702 [37]; 2000-431703 [37]; 2000-431704 [37]; 2000-452084 [39]; 2000-452085 [39]; 2000-452089 [39]; 2000-452090 [39]; 2000-465392 [40]; 2000-475423 [41]; 2002-546064 [58]

DNN N2000-322134

TI **Leak**-proof **casing** structure of prismatic **metal air battery** cell, has peripheral edge and basin at bend portion of cathode **casing** element to support separator and diffuser.

DC X16

IN ABRAMSON, M; DOPP, R B; SHRIM, Y

PA (EFLE-N) EFL ELECTRIC FUEL LTD

CYC 90

PI WO 2000036689 A1 20000622 (200037)* EN 51p H01M012-06
RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW
W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG US UZ VN YU ZA ZW
AU 2000028435 A 20000703 (200046) H01M012-06

ADT WO 2000036689 A1 WO 1999-US28253 19991130; AU 2000028435 A AU 2000-28435 19991130

FDT AU 2000028435 A Based on WO 2000036689

PRAI US 1999-293458 19990415; US 1998-112292P 19981215

IC ICM H01M012-06
ICS H01M002-02

AB WO 200036689 A UPAB: 20021212
NOVELTY - Anode **casing** (102) and rectangular cathode **casing** (104) with rounded corners (106,108) connects continuous side walls. Peripheral trough (142) and rim (140) are formed in bend portion between base (110) and side walls (114) of **casing** (102). A peripheral edge and basin (132,134) are formed among base (112) and side walls (116) of element (104). Separator and diffuser are supported by edge (132).

DETAILED DESCRIPTION - A grommet (130) is provided for airtight seal and prevents contact between the anode and cathode **case** elements (102,104). The peripheral edge (154) of cathode **casing** element (104) is crimped peripheral trough (142) of anode **casing** element with the grommet (130) between them.

USE - For **metal air battery** cells.

ADVANTAGE - Improves mechanical strength of the prismatic **case** and **leak**-proof property, as peripheral trough and rim in anode **case** element and peripheral edge and basin and grommet provided between side walls of each **case** element.

DESCRIPTION OF DRAWING(S) - The figure shows the sectional view

of **leak**-proof **casing** structure of prismatic **metal air battery** cell.
Anode **casing** element 102
Cathode **case** element 104
Rounded corners 106,108
Base 110
Side walls 114,116
Grommet 130
Peripheral edges 132,154
Peripheral basin 134
Peripheral rim 140
Peripheral trough 142
Dwg.8A/39

FS EPI
FA AB; GI
MC EPI: X16-A01B; X16-D; X16-F01A

L29 ANSWER 20 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2000-364262 [31] WPIX
CR 1997-001502 [01]; 1999-346570 [29]
DNN N2000-272597
TI Modular zinc-air cell for multicell **metal-air battery**, e.g. for electric vehicle, has **housing** with two outer surfaces and two inner walls defining outer **chambers** through which air is distributed uniformly.
DC X16 X21 X22
IN GILON, Y; GUTKIN, A; SCHNEIDER, V; SHRIM, Y
PA (EFLE-N) EFL ELECTRIC FUEL LTD
CYC 1
PI US 6057052 A 20000502 (200031)* 10p H01M008-04
ADT US 6057052 A CIP of US 1995-451012 19950525, CIP of US 1997-987518 19971209, US 1998-33725 19980303
FDT US 6057052 A CIP of US 5753384, CIP of US 5904999
PRAI US 1998-33725 19980303; US 1995-451012 19950525; US 1997-987518 19971209
IC ICM H01M008-04
AB US 6057052 A UPAB: 20000630
NOVELTY - The cell has a **housing** with two outer major surfaces and two spaced apart inner walls. The inner walls define a first **chamber** for a zinc electrode. The **chamber** also forms, with the outer surfaces, two outer **chambers** that receive reaction air. The flow of reaction air is directed from an inlet provided in the outer side surface of a cell **housing** to provide oxygen required for cell operation.
DETAILED DESCRIPTION - The reaction air is divided to pass through the outer **chambers** (24) in a uniform flow across the outer faces of the air electrodes (30). The reaction air minus the consumed oxygen exits through another outlet (42) provided in

the outer side surface of the cell **housing**. The reaction air passing through a cell (12) is significantly heated in the cell due to contact with the hot air electrode.

USE - For multicell **metal-air battery** for electric vehicle or motorcycle.

ADVANTAGE - Eliminates **leak** caused by peripheral side by side welding of two **housing** halves. Eases fabrication of cells including the alignment of two symmetrical half cells for gluing. Prevents damage and short circuiting in the electrical interconnection between current collectors of adjacent cells.

DESCRIPTION OF DRAWING(S) - The figure shows the exploded view of the modular zinc-air cell.

Cell 12

Outer **chambers** 24

Air electrodes 30

Outlet 42

Dwg.3/5

FS EPI

FA AB; GI

MC EPI: X16-D01; X16-F01; X21-A01F; X21-B01A; X22-F01; X22-P02

L29 ANSWER 21 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

AN 2000-292738 [25] WPIX

DNN N2000-219560 DNC C2000-088376

TI Production of bifunctional air electrode for use in a rechargeable **metal-air electrochemical cell** comprises **wetting** carbon particles with a water soluble oxygen evolution catalyst precursor in an aqueous solution.

DC A85 L03 X16

IN GOLOVIN, M N; KUZNETSOV, I

PA (AERE-N) AER ENERGY RESOURCES INC

CYC 89

PI WO 2000016419 A1 20000323 (200025)* EN 31p H01M004-86

RW: AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ TZ UG ZW

W: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT TZ UA UG UZ VN YU ZA ZW

AU 9963921 A 20000403 (200034) H01M004-86

US 6291090 B1 20010918 (200157) H01M004-90

ADT WO 2000016419 A1 WO 1999-US21528 19990917; AU 9963921 A AU 1999-63921 19990917; US 6291090 B1 US 1998-154812 19980917

FDT AU 9963921 A Based on WO 2000016419

PRAI US 1998-154812 19980917

IC ICM H01M004-86; H01M004-90

ICS H01M004-88; H01M012-06

AB WO 200016419 A UPAB: 20000524

NOVELTY - Bifunctional air electrode (10) is produced by **wetting** carbon particles with a water soluble oxygen evolution catalyst precursor in an aqueous solution. The wetted carbon particle mixture is dried and blended with a binder to form an active layer (16) mixture. The active layer mixture is laminated onto a wet-proofing layer (12) and is contacted with a current collector (14).

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are also included for:

(A) a bifunctional air electrode for use in a rechargeable **metal-air electrochemical cell** ; and

(B) a rechargeable metal-air electrochemical comprising the novel air electrode, a cell **case**, an anode, an electrolyte in contact with the anode and air electrode.

USE - The method is used in making bifunctional air electrode. The bifunctional air electrode is used in a rechargeable **metal-air electrochemical cell** for use in a portable electronic equipment such as personal computers.

ADVANTAGE - The method provides an air electrode that exhibits greater power output and longer useful life compared to conventional air electrodes. The method is simple and efficient for no high temperature treatment of the catalyst precursor is required and the process can be conducted at atmospheric temperature.

DESCRIPTION OF DRAWING(S) - The figure shows a perspective view of the bifunctional air electrode made from the novel method.

Air electrode 10

Wet-proofing layer 12

Current collector 14

Active layer 16

Dwg.1/2

TECH WO 200016419 A1UPTX: 20000524

TECHNOLOGY FOCUS - ELECTRICAL POWER AND ENERGY - Preferred Method: The step of drying the wetted carbon particle mixture is conducted in atmospheric pressure and at 80 - 150 degrees C. This step is carried out to evaporate the water without alloying and deteriorating the carbon particles and to distribute uniformly the oxygen reduction and oxygen evolution catalysts throughout the carbon/catalyst mixture.

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Components: The carbon particles comprise carbon black.

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Precursor: At least one oxygen reduction catalyst precursor is a water-soluble silver compound, preferably silver nitrate or silver acetate. The oxygen evolution catalyst precursor is a water soluble nickel, iron,

or cobalt compounds, preferably their nitrates and acetates. Preferred Composition: The active layer contains 2-20 wt.% oxygen evolution catalyst precursor, 2-20 wt.% oxygen reduction catalyst precursor, 60-90 wt.% carbon black, and 16-40 wt.% binder.

TECHNOLOGY FOCUS - POLYMERS - Preferred Binder: The binder is polytetrafluoroethylene.

FS CPI EPI
FA AB; GI
MC CPI: A04-E08; A12-E06A; L03-H04E3
EPI: X16-E06C1
PLE UPA 20000524
[1.1] 018; R00975 G0022 D01 D12 D10 D51 D53 D59 D69 D82 F- 7A; H0000; P0511
[1.2] 018; ND07; ND01; K9676-R; K9483-R; N9999 N6439; N9999 N7192 N7023; Q9999 Q7409 Q7330; Q9999 Q7396 Q7330; Q9999 Q6791; Q9999 Q7818-R

L29 ANSWER 22 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 2000-202444 [18] WPIX
DNN N2000-150925 DNC C2000-062382
TI **Air zinc** cell in **air battery** , has air diffused layer of net structure configured in lower stage of anode **case.**
DC F09 L03 X16
PA (RAYN) TOSHIBA BATTERY CO LTD
CYC 1
PI JP 2000040538 A 20000208 (200018)* 4p H01M012-06
ADT JP 2000040538 A JP 1998-209196 19980724
PRAI JP 1998-209196 19980724
IC ICM H01M012-06
ICS H01M002-14
AB JP2000040538 A UPAB: 20000516
NOVELTY - An air diffused layer (9) of net structure is configured in lower stage of anode **case** (7). A water repellent film (8) and separator are configured on upper stage of anode **case.**
USE - In air battery.
ADVANTAGE - Improves **leak**-proof effect and provides reliable air battery.
DESCRIPTION OF DRAWING - The figure shows sectional drawing of air zinc cell. (7) Anode **case**; (8) Water repellent film; (9) Air diffused layer.
Dwg.1/1
FS CPI EPI
FA AB; GI
MC CPI: F05-A06; L03-E05
EPI: X16-A01B; X16-D01; X16-F01A; X16-F02

L29 ANSWER 23 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1999-362846 [31] WPIX
DNN N1999-270856
TI Sealed battery **case** for lithium cell, nickel-hydrogen battery etc - has projection on inner circumference of side wall and portion adjacent to side wall has specific thickness.
DC X16
PA (ISHI-N) ISHIZAKI PRESS KOGYO KK
CYC 1
PI JP 11135085 A 19990521 (199931)* 6p H01M002-04
ADT JP 11135085 A JP 1997-295781 19971028
PRAI JP 1997-295781 19971028
IC ICM H01M002-04
AB JP 11135085 A UPAB: 19990819
NOVELTY - The battery **case** molds a plate provided with a side wall (1b) and bottom wall (1a) into a U-shaped cross-section by press stamping. A thick projection (1d) is formed on the inner circumference of the side wall. A portion with an opening (1c) is formed near the side wall and arise from the projection and has a thickness lesser than that of the side wall.
USE - For silver oxide battery, manganese dioxide **battery**, mercury cell, **air battery**, **lithium** cell, ion-lithium **battery**, nickel-hydrogen battery, nickel-cadmium battery.
ADVANTAGE - The battery **case** excels in **leak** -proof characteristics and can efficiently be filled with anodic agents. A separator can be conveniently formed between the anode and cathode. DESCRIPTION OF DRAWING(S) - The figure represents sectional view of airtight battery provided with seal **case**. (1a) Bottom wall; (1b) Side; (1c) Opening; (1d) Thick projection.
Dwg.1/11
FS EPI
FA AB; GI
MC EPI: X16-F01

L29 ANSWER 24 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1998-404145 [35] WPIX
DNN N1998-315131 DNC C1998-122038
TI Non-mercuration air battery - includes non-mercuration zinc powder whose bulk density and electrolyte ratio are suitably regulated for improving **leakage** proof characteristic of negative electrode active material.
DC L03 X16
PA (RAYN) TOSHIBA BATTERY CO LTD
CYC 1
PI JP 10162869 A 19980619 (199835)* 6p H01M012-06
JP 3474721 B2 20031208 (200403) 6p H01M012-06

ADT JP 10162869 A JP 1996-321293 19961202; JP 3474721 B2 JP 1996-321293 19961202
FDT JP 3474721 B2 Previous Publ. JP 10162869
PRAI JP 1996-321293 19961202
IC ICM H01M012-06
ICS H01M004-06; H01M004-42
AB JP 10162869 A UPAB: 19980904
The battery includes a vent (2) provided in the lower surface. A positive electrode assembly (7) includes a diffusion paper (3), a water repellent film (4), a catalyst layer (5) and a separator (6) inside a positive electrode **case** (1). A negative electrode active material layer (8) which contains an electrolyte and a non-mercuration zinc powder in the form of a gel faces the separator. An insulated gasket (10) is provided between the sealed portions of the negative electrode **case** and the positive electrode **case**. The **leakage** proof characteristic of the negative electrode active material is improved by regulating the bulk density and the electrolyte ratio of the non-mercuration zinc powder.
ADVANTAGE - The battery improves flow property of negative electrode active material, improves **leakage** proof characteristic and offers superior battery with excellent discharge utilisation factor.
Dwg.1/1
FS CPI EPI
FA AB; GI
MC CPI: L03-E01B2; L03-E01B6
EPI: X16-A01B; X16-D; X16-E01C; X16-E03

L29 ANSWER 25 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1997-318967 [29] WPIX
CR 1997-064785 [06]; 1997-384654 [35]; 1997-414574 [38]
DNN N1997-264110 DNC C1997-102918
TI Production of button-size **metal-air electrochemical cell** having metal cathode current collector - where metal collecting substrate is hardened by sandblasting, shotblasting or plastic deformation before incorporation in the cell to improve strength and rigidity.
DC L03 M24 M29 X16
IN DOPP, R B; OLTMAN, J E; PASSANITI, J L
PA (RAYV) RAYOVAC CORP
CYC 1
PI US 5637117 A 19970610 (199729)* 11p H01M010-04
ADT US 5637117 A Div ex US 1994-208450 19940309, US 1995-479361 19950607
FDT US 5637117 A Div ex US 5587259
PRAI US 1994-208450 19940309; US 1995-479361 19950607
IC ICM H01M010-04
AB US 5637117 A UPAB: 19970926

Production of a button-size **metal-air electrochemical cell** including a metal cathode current collector, comprises (a) hardening a metal collecting substrate by (i) sandblasting, (ii) shotblasting or (iii) plastic deformation of the metal collecting substrate below the recrystallisation temperature range of the metal and subsequent heating of the substrate to above the transformation temperature of the metal followed by quenching the substrate below the transformation temperature of the metal to make the collector; and (b) incorporating the collector in the cell.

Also claimed is the method as above where sandblasting is excluded as a method of hardening the substrate.

USE - Used in the production of **electrochemical cells** having **metal** anodes and **air** cathodes.

ADVANTAGE - The amount of physical and electrical contact between the current collector substrate and the catalytically active material and the current collector material and the inner side walls of cathode **containers**, is increased. The surface areas of current collecting substrates is increased, and the performance of the cell under pulse and high current drain conditions is improved. The hardness of the current collecting substrates is increased which improves their strength and rigidity. This helps to reduce electrolyte **leakage.**

Dwg.4/4

FS CPI EPI
FA AB; GI
MC CPI: L03-E01B2; M29-A; M29-B; M29-C01

L29 ANSWER 26 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1997-124372 [12] WPIX
DNN N1997-102638 DNC C1997-039901
TI Mfg. button-type **air zinc battery** - in which peripheral edge of current collecting member is made flat to be pressed to inner wall of positive electrode **case**..
DC L03 X16
PA (MATU) MATSUSHITA DENKI SANGYO KK
CYC 1
PI JP 09007646 A 19970110 (199712)* 4p H01M012-06
JP 3144267 B2 20010312 (200116) 4p H01M012-06
ADT JP 09007646 A JP 1995-155910 19950622; JP 3144267 B2 JP 1995-155910 19950622
FDT JP 3144267 B2 Previous Publ. JP 09007646
PRAI JP 1995-155910 19950622
IC ICM H01M012-06
ICS H01M004-74
AB JP 09007646 A UPAB: 19970320
A positive electrode using an almost truncated cone-type expanded

current collecting member of which a peripheral edge is included downward by 40-60 deg. to an inner surface, is accommodated in a positive electrode **case**, and the peripheral edge of the current collecting member is made flat to be pressed to the inner wall of the positive electrode **case**.

ADVANTAGE - Short circuit and **leakage** of liq. are prevented.

Dwg.0/2

FS CPI EPI
FA AB
MC CPI: L03-E01B6
EPI: X16-A01B; X16-D01

L29 ANSWER 27 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1995-254430 [33] WPIX
DNN N1995-196415 DNC C1995-116297
TI Coated air cathode for a rechargeable metal battery - comprises a gas permeable coating providing improved **leak** resistance and extended lifetime.
DC A85 L03 X16 X22
IN CHEIKY, M C
PA (DREI-N) DREISBACH ELECTROMOTIVE INC
CYC 1
PI US 5432022 A 19950711 (199533)* 6p H01M004-86
ADT US 5432022 A US 1993-150487 19931112
PRAI US 1993-150487 19931112
IC ICM H01M004-86
AB US 5432022 A UPAB: 19950824
A cathode for a **metal-air battery** comprises: (1) a conductive, air-permeable current collector; and (2) a gas-permeable top coat deposited on the outer surface of the cathode current collector, comprising a hydrophobic binder (a) contg. a dispersion of a material (b) capable of absorbing CO2 from air. Also claimed is a **metal-air battery** comprising a **battery case** contg. such a cathode, a liq. electrolyte and an anode.

USE - Used in rechargeable batteries for automotive applications.

ADVANTAGE - The top coat protects the battery from the effects of atmos. CO2, extending the lifetime of the battery and preventing redn. in output due to neutralisation of the electrolyte. The battery exhibits even gas diffusion rate throughout its cycle life and is resistant to **leakage** of liq.

Dwg.0/3

FS CPI EPI
FA AB
MC CPI: A12-E06A; A12-T04C; L03-E01B2
EPI: X16-B01X; X16-D01; X16-E06; X22-F01

DRN 1066-U; 1502-U; 1509-U; 1669-U
PLE UPA 19951004
[1.1] 017; D01 D02 D69 7A-R F- 7A; P0000
[1.2] 017; R00975 G0022 D01 D12 D10 D51 D53 D59 D69 D82 F- 7A; H0000; H0011-R; P0511
[1.3] 017; ND01; Q9999 Q7341 Q7330; Q9999 Q7409 Q7330; K9701 K9676; K9416; Q9999 Q9289 Q9212; Q9999 Q9234 Q9212
[1.4] 017; Q9999 Q6791; B9999 B3509 B3485 B3372; B9999 B4875 B4853 B4740; Q9999 Q7114-R; N9999 N6224 N6177; K9712 K9676; K9676-R; K9483-R; B9999 B5221 B4740; N9999 N7147 N7034 N7023; B9999 B5243-R B4740
[2.1] 017; R00975 G0022 D01 D12 D10 D51 D53 D59 D69 D82 F- 7A; H0000; P0511
[2.2] 017; ND01; Q9999 Q7341 Q7330; Q9999 Q7409 Q7330; K9701 K9676; K9416; Q9999 Q9289 Q9212; Q9999 Q9234 Q9212
[2.3] 017; Q9999 Q8060; B9999 B4875 B4853 B4740; B9999 B5414-R B5403 B5276; K9483-R

L29 ANSWER 28 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1995-071589 [10] WPIX
DNN N1995-056386 DNC C1995-032348
TI Leakproof **zinc air** button **battery** - uses acrylic fibre material between air holes in **case** and positive air pole to prevent **leakage** of electrolyte during fault discharge NoAbstract.
DC A85 L03 X16
PA (MATU) MATSUSHITA DENKI SANGYO KK
CYC 1
PI JP 06349529 A 19941222 (199510)* 3p H01M012-06
ADT JP 06349529 A JP 1993-137355 19930608
PRAI JP 1993-137355 19930608
IC ICM H01M012-06
AB JP 06349529 A UPAB: 19950314
Dwg.1/2
FS CPI EPI
FA NOAB; GI
MC CPI: A04-D02B; A12-E06; L03-E05
EPI: X16-A01B; X16-D01

L29 ANSWER 29 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1994-357346 [44] WPIX
DNN N1994-280064
TI Vent system for **electrochemical cell** e.g rechargeable **metal-air** cell - has various combinations of gas-permeable, hydrophobic membranes and diffuser material which cover recess and gas exit hole to provide humidity control for battery.
DC X16

IN PEDICINI, C S
PA (AERE-N) AER ENERGY RESOURCES INC
CYC 54
PI US 5362577 A 19941108 (199444)* 15p H01M002-12
WO 9429908 A2 19941222 (199505) EN 40p H01M002-12
RW: AT BE CH DE DK ES FR GB GR IE IT LU MC NL OA PT SE
W: AT AU BB BG BR BY CA CH CN CZ DE DK ES FI GB GE HU JP KG KP KR KZ LK LU LV MD MG MN MW NL NO NZ PL PT RO RU SD SE SI SK TJ TT UA UZ VN
AU 9469202 A 19950103 (199521) H01M002-12
WO 9429908 A3 19950330 (199614) H01M002-12
EP 708988 A1 19960501 (199622) EN 1p H01M002-12
R: AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE
JP 09500480 W 19970114 (199712) 45p H01M002-12
EP 708988 B1 19980128 (199809) EN 18p H01M002-12
R: AT BE CH DE DK ES FR GB GR IE IT LI LU MC NL PT SE
DE 69408324 E 19980305 (199815) H01M002-12
JP 2865424 B2 19990308 (199915) 12p H01M002-12
CA 2164132 C 20001107 (200061) EN H01M002-12
ADT US 5362577 A US 1993-71844 19930604; WO 9429908 A2 WO 1994-US6173 19940602; AU 9469202 A AU 1994-69202 19940602; WO 9429908 A3 WO 1994-US6173 19940602; EP 708988 A1 EP 1994-917505 19940602, WO 1994-US6173 19940602; JP 09500480 W WO 1994-US6173 19940602, JP 1995-501919 19940602; EP 708988 B1 EP 1994-917505 19940602, WO 1994-US6173 19940602; DE 69408324 E DE 1994-608324 19940602, EP 1994-917505 19940602, WO 1994-US6173 19940602; JP 2865424 B2 WO 1994-US6173 19940602, JP 1995-501919 19940602; CA 2164132 C CA 1994-2164132 19940602, WO 1994-US6173 19940602
FDT AU 9469202 A Based on WO 9429908; EP 708988 A1 Based on WO 9429908; JP 09500480 W Based on WO 9429908; EP 708988 B1 Based on WO 9429908; DE 69408324 E Based on EP 708988, Based on WO 9429908; JP 2865424 B2 Previous Publ. JP 09500480, Based on WO 9429908; CA 2164132 C Based on WO 9429908
PRAI US 1993-71844 19930604
REP 3.Jnl.Ref; DE 2345473; EP 391443; FR 1064629; FR 2084248; FR 2148276; FR 2222758; FR 2387524; FR 2513813; FR 2673488; GB 1459135; GB 2021306; JP 01077869; JP 62098559; SU 752566; US 2450472; US 2704781; US 2938064; US 3507708
IC ICM H01M002-12
ICS H01M002-02; H01M002-06; H01M012-06; H01M012-08
AB US 5362577 A UPAB: 19941223
The vent system provides a small gas exit hole that is sufficiently small to prevent electrolyte **leakage** and also intake of excess carbon dioxide or excess water vapor from the atmosphere. Also, various combinations of gas-permeable, hydrophobic membranes and diffuser material may cover the gas exit hole to provide humidity control for the battery while exhausting gases from the battery. A recess may be provided within the **case** such

that the gas exit hole communicates between the atmosphere and the recess. Also, various combinations of gas-permeable, hydrophobic membranes and diffuser material may cover the recess and gas exit hole to provide humidity control for the battery while exhausting gases from the battery **case**.

In the vent system gas-permeable, hydrophobic membranes and diffuser material may fill an opening so as to exhaust gas from the **case**. An electrode lead extends along the battery **case** and through the seam of the battery **case** in a manner in which a hermetic seal is provided around the lead.

ADVANTAGE - Exhausts gas generated within battery **case** while maintaining hermetic seal of **case**. Prevents excess water loss or gain within battery and minimises carbon dioxide intake. Mfg. of hermetically sealed electrode lead is straightforward and simple.

Dwg.2/13

ABEQ EP 708988 B UPAB: 19980302

The vent system provides a small gas exit hole that is sufficiently small to prevent electrolyte **leakage** and also intake of excess carbon dioxide or excess water vapor from the atmosphere. Also, various combinations of gas-permeable, hydrophobic membranes and diffuser material may cover the gas exit hole to provide humidity control for the battery while exhausting gases from the battery. A recess may be provided within the **case** such that the gas exit hole communicates between the atmosphere and the recess. Also, various combinations of gas-permeable, hydrophobic membranes and diffuser material may cover the recess and gas exit hole to provide humidity control for the battery while exhausting gases from the battery **case**.

In the vent system gas-permeable, hydrophobic membranes and diffuser material may fill an opening so as to exhaust gas from the **case**. An electrode lead extends along the battery **case** and through the seam of the battery **case** in a manner in which a hermetic seal is provided around the lead.

ADVANTAGE - Exhausts gas generated within battery **case** while maintaining hermetic seal of **case**. Prevents excess water loss or gain within battery and minimises carbon dioxide intake. Mfg. of hermetically sealed electrode lead is straightforward and simple.

Dwg.1/13

FS EPI

FA AB; GI

MC EPI: X16-A01B; X16-D01; X16-F03B

L29 ANSWER 30 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN

AN 1993-105565 [13] WPIX

TI Cylinder type **air zinc battery** - gives good resistance against liq. **leakage** caused by

over-discharge using anode pressure adhered through thin membrane to **case** NoAbstract.
DC L03 X16
PA (MATU) MATSUSHITA ELEC IND CO LTD
CYC 1
PI JP 05047388 A 19930226 (199313)* H01M004-86
ADT JP 05047388 A JP 1991-199405 19910808
PRAI JP 1991-199405 19910808
IC ICM H01M004-86
ICS H01M012-06
FS CPI EPI
FA NOAB; GI
MC CPI: L03-E05
EPI: X16-E06C1

L29 ANSWER 31 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1993-040843 [05] WPIX
DNN N1993-222161 DNC C1993-128888
TI Battery of flat gas depolarisable cells - includes hydrophobic **packaging** membrane of controlled Gurley number.
DC A85 L03 X16
IN HARADA, M; KONISHI, H; MORITA, Y; YOKOYAMA, T
PA (MATU) MATSUSHITA ELEC IND CO LTD
CYC 2
PI JP 04366547 A 19921218 (199305)* 6p H01M002-22
US 5242763 A 19930907 (199337)B 12p H01M002-22
ADT JP 04366547 A JP 1991-139883 19910612; US 5242763 A US 1992-863127 19920403
PRAI JP 1991-139883 19910612
IC ICM H01M002-22
ICS H01M002-10; H01M006-44; H01M006-46; H01M012-04
AB US 5242763 A UPAB: 19931123 ABEQ treated as Basic
Battery comprises a stack of series connected, flat gas depolarisable cells with a microporous hydrophobic membrane between a gas electrode in each cell and an internal wall of a cell **container** having a vent opening, the membrane having as Gurley number of 10000-50000 sec. Pref. each cell also has at least one terminal in the form of a projection of height at least 0.1 mm.
USE/ADVANTAGE - With e.g. a **Zn-air battery**. Electrolyte **leakage** is avoided even in the overdischarged condition. (First major country equivalent to JP04366547)
15
Dwg.1/2
AB JP 04366547 A UPAB: 19981001
Dwg.1/6
FS CPI EPI
FA AB; GI

MC EPI: X16-F03A

L29 ANSWER 32 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1992-083205 [11] WPIX
TI **Battery** e.g. button type **air zinc cell, fuel battery** - has cobalt porphyrin complex film provided between interior of **container** and air intake side of gas diffusion electrode.
DC A85 E12 L03 R47 X16
PA (MATU) MATSUSHITA ELEC IND CO LTD
CYC 1
PI JP 04002046 A 19920107 (199211)* 4p
JP 2817343 B2 19981030 (199848)B 4p H01M002-16
ADT JP 04002046 A JP 1990-101988 19900418; JP 2817343 B2 JP 1990-101988 19900418
FDT JP 2817343 B2 Previous Publ. JP 04002046
PRAI JP 1990-101988 19900418
IC H01M002-16
ICM H01M002-16
ICS H01M012-06
AB JP 2817343 B UPAB: 19981203 ABEQ treated as Basic
The battery has a **container** (10) within which a gas diffusion electrode (1) containing oxygen as an active material is provided. An air intake hole (3) is provided in the **container**, which leads to the open air. A cobalt porphyrin complex film (4) is provided between the interior of the **container** and air intake side of the gas diffusion electrode.
ADVANTAGE - Excels in **leak** resistance and long term storage property. Operates in wide load range.
Dwg.1/2
FS CPI EPI
FA AB; GI
MC CPI: A12-E06; E05-L02B; L03-E01D; L03-E01A
EPI: X16-F02

L29 ANSWER 33 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1990-304595 [40] WPIX
DNN N1990-234129 DNC C1990-131562
TI Rechargeable **zinc-air battery** with no electrolyte pump - does not lose electrolyte on charging or **leak** and is used for small-scale consumer use.
DC A85 F07 L03 X16
IN CHEIKY, M C
PA (DRAC-N) DRACEBACK ELECTROMO; (DREI-N) DREISBACH ELECTROMO
CYC 2
PI US 4957826 A 19900918 (199040)*
JP 02288164 A 19901128 (199103)

ADT US 4957826 A US 1989-343193 19890425; JP 02288164 A JP 1989-124104 19890517
PRAI US 1989-343193 19890425
IC H01M012-06
AB US 4957826 A UPAB: 19930928
A rechargeable **metal-air battery** (10), which does not lose electrolyte during the charging cycle, comprises a metal anode (14), a porous anode separator (20) for retaining liq. electrolyte, which has two layers interconnected by at least one edge, and which sandwiches (20a,20b) the anode and wraps around it, an air cathode (22), and a liq. electrolyte completely entrained in the separator.

Also claimed is an anode for a **metal-air battery** as above comprising a gas-permeable metal anode layer combined with a continuous wrap of porous electrode separator around the anode, the separator being wettable by liq. electrolyte, and absorbent and oxidn. resistant under battery operating conditions. Further is a rechargeable battery as above comprising anode, porous separator, air cathode, cathode gel (24) sandwiched between cathode and anode, liq. electrolyte and a **container** (12) without a liq. electrolyte reservoir which encloses and resiliently presses the components together, with the bottom **container** wall being in contact with a layer of electrolyte separator (20b). Additionally claimed is a battery as above in which the anode comprises an electrically conductive mesh screen (16) substrate with Zn (18) powder, flakes, granules, capsules or fibre being packed in the mesh in a semi-permeable density. Also claimed is a battery as above in which the anode and anode separator each comprise many separate but interconnected sections.

USE/ADVANTAGE - A rechargeable **Zn-air battery** (claimed) which does not lose electrolyte during charging, or **leak**, and does not need a mechanical electrolyte pump is provided. The batteries are useful for consumer small-scale uses such as radios and portable computers and give high energy densities.

1/3
FS CPI EPI
FA AB; GI
MC CPI: A12-E06; A12-E06A; F01-D09; F04-E; L03-E03
EPI: X16-D
PLC UPA 19930924
KS: 0231 0248 1974 3198 2512 2524 2599 2607 2662 3256 3258 2739

FG: *001* 014 04- 041 046 050 231 240 247 252 481 50& 501 52& 540 541 545 58& 597 60- 603 623 627 651 688

L29 ANSWER 34 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1990-274522 [36] WPIX

DNN N1990-212325 DNC C1990-118652
TI **Metal-air battery** with easily removable anodes - has moulded elastomer anode seals which are **leak** resistant.
DC L03 X16
IN NIKSA, A J; NOSCAL, J M; SOVICH, T J; NIKASA, M J
PA (ELTE) ELTECH SYSTEMS CORP
CYC 17
PI US 4950561 A 19900821 (199036)*
EP 405558 A 19910102 (199102)
R: AT BE CH DE ES FR GB GR IT LI LU NL SE
CA 2018674 A 19901229 (199111)
JP 03037972 A 19910219 (199113)
AU 9063627 A 19920402 (199223)# H01M012-06
EP 405558 A3 19930310 (199349)
ADT US 4950561 A US 1989-373362 19890629; EP 405558 A EP 1990-112369 19900628; JP 03037972 A JP 1990-171285 19900628; EP 405558 A3 EP 1990-112369 19900628
PRAI US 1989-373362 19890629
REP NoSR.Pub; DE 1184826; DE 1805819; DE 2011224; DE 3239396; EP 297376; FR 1503193; FR 1539952; FR 2412951; GB 1158736; US 3554810; US 3592692; US 3682706
IC ICM H01M012-06
ICS H01M002-38; H01M008-02
AB US 4950561 A UPAB: 19930928
A **metal-air battery** with easily removable well-sealed anodes, has one or more cells each comprising frames (40) having opposed faces with air cathodes (52) sealed into them, and access openings (60) into which replaceable anode blanks (62), comprising consumable (64) and protruding (66) ends, are inserted, the openings being sealed by a labyrinth seal (68) moulded directly onto the anode blank between the two ends.

Also claimed is a **metal-air battery** as above comprising several adjacent aligned cells, an aligned cathode bus (22) for each cell, an anode blank (62) with means for replaceably positioning the blanks within the electrolyte **chambers** (50) and with the anode ends (66) giving contact edges (20) in the same plane with the cathode bus sections. Further claimed is a **metal-air battery** as above in which each labyrinth seal is of elastomer rubber, comprising several tapered lobes pressing against the frame opening, and there are means for circulating electrolyte.

USE/ADVANTAGE - A **metal-air battery** (claimed) with easily removable anodes and an effective anode seal is provided within the need for end plates and drive screw or close tolerance machining. Dissolution occurs on both sides of the anode.
@
1/15@

ABEQ EP 405558 A UPAB: 19940126
A **metal-air battery** with easily removable well-sealed anodes, has one or more cells each comprising frames (40) having opposed faces with air cathodes (52) sealed into them, and access openings (60) into which replaceable anode blanks (62), comprising consumable (64) and protruding (66) ends, are inserted, the openings being sealed by a labrinth seal (68) moulded directly onto the anode blank between the two ends.

Also claimed is a **metal-air battery** as above comprising several adjacent aligned cells, an aligned cathode bus (22) for each cell, an anode blank (62) with means for replaceably positioning the blanks within the electrolyte **chambers** (50) and with the anode ends (66) giving contact edges (20) in the same plane with the cathode bus sections. Further claimed is a **metal-air battery** as above in which each labyrinth seal is of elastomer rubber, comprising several tapered lobes pressing against the frame opening, and there are means for circulating electrolyte.

USE/ADVANTAGE - A **metal-air battery** (claimed) with easily removable anodes and an effective anode seal is provided within the need for end plates and drive screw or close tolerance machining. Dissolution occurs on both sides of the anode. @(15pp Dwg.No.1/15)@

FS CPI EPI
FA AB; GI
MC CPI: L03-E04
EPI: X16-B01X; X16-D; X16-E09

L29 ANSWER 35 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1987-249887 [35] WPIX
DNN N1987-186978 DNC C1987-105830
TI **Case** for a metal-air cell - comprises a thermoplastic **container** with a metal cover.
DC A14 A28 A85 L03 X16
IN OLTMAN, J E; SANDEN, G F
PA (RAYV) RAYOVAC CORP
CYC 1
PI US 4687714 A 19870818 (198735)* 8p
ADT US 4687714 A US 1986-826130 19860204
PRAI US 1986-826130 19860204
IC H01M012-04
AB US 4687714 A UPAB: 19930922
Case for a metal-air cell comprises: a thermoplastic, electrolyte-resistant **container** sufficiently flexible to accommodate anode growth during discharge; and a multifunctional metal cover having an air inlet and sufficient rigidity to prevent distortion of the air cathode during discharge and acting as the positive terminal. Thermoplastic is pref. (modified) polystyrene,

(modified) PVC, polyamide, polysulphone or a polyacetal resin, esp. polystyrene.
USE/ADVANTAGE - Esp. with **metal/air batteries** used in consumer and industrial lighting. Cell **case** is low cost, is capable of accommodating anode expansion, results in min. void space and is **leak** resistant.
1/5
FS CPI EPI
FA AB
MC CPI: A12-E06C; L03-E01D
EPI: X16-D; X16-F01
DRN 1512-U; 1513-U; 1514-U; 1534-U
PLC UPA 19930924
KS: 0209 0231 0304 0759 1275 1283 1309 1511 1990 2551 2604 2607 2628 2654 3258 2739 2850

FG: *001* 014 04- 05- 055 056 061 062 063 080 138 141 153 180 231 50& 506 509 541 542 545 546 551 560 566 575 596 60- 623 627 650 651 681 688

L29 ANSWER 36 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1983-31225K [13] WPIX
TI Button type **air-zinc battery** mfr. - preventing electrolyte **leakage**, adheres collector net placed on repelling film through metal material to **case**.
NoAbstract.
DC L03 X16
PA (MATU) MATSUSHITA ELEC IND CO LTD
CYC 1
PI JP 58030065 A 19830222 (198313)* 4p
PRAI JP 1981-128522 19810817
IC H01M002-02; H01M012-06
FS CPI EPI
FA NOAB
MC CPI: L03-E01B2

L29 ANSWER 37 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1982-95451E [45] WPIX
TI **Metal-air battery** with hollow anode open only at one end - to reduce risk of **leakage** between anode and cap.
AW POLY TETRA FLUOROETHYLENE PTFE.
DC A85 L03 X16
IN VIGNAUD, R
PA (SOPW) SOC LES PILES WONDER
CYC 13
PI EP 63982 A 19821103 (198245)* FR 13p

R: AT BE CH DE GB IT LI NL SE
FR 2503935 A 19821015 (198247)
JP 57182978 A 19821111 (198251)
US 4450211 A 19840522 (198423)
CA 1169920 A 19840626 (198430)
EP 63982 B 19871104 (198744) FR
R: AT BE CH DE GB IT LI NL SE
DE 3277603 G 19871210 (198750)
ADT EP 63982 A EP 1982-400639 19820407; US 4450211 A US 1982-367992 19820413
PRAI FR 1981-7409 19810413
REP FR 1455261; FR 1457130; FR 2060759; FR 2193264; FR 2251109; US 2641623
IC H01M004-08; H01M006-04; H01M012-06
AB EP 63982 A UPAB: 19930915
An electrochemical source involving the mass of anodic material contd. in a thinwall positive electrode having an external current collector involves a positive electrode shaped like a ball or a finger stall, i.e. a tubular form closed at one end and divergent towards the only open end.

For construction of **metal/air** dry cell **batteries**, pref. alkaline, to minimise the difficulties of obtaining an effective seal between the anode and the insulating cap supporting a coaxial cathode. More reliable than use of cylindrical tubular anodes with a coaxial cathode passing through disc-shaped plugs at each end of the anode.

1/2

ABEQ US 4450211 A UPAB: 19930915
A **metal-air** type **battery** comprises a cylindrical **container** with a thin air cathode (1) formed by a slightly truncated conical section (1a) closed at the smaller end by a hemispherical integral cap (16) crowned by a solid cylindrical nipple (3), and spaced from the **container** inner surface, and an anode mass (4) occupying a substantial part of the space within the cathode and spaced from it by a separator (6) applied against the cathode internal surface.

A current collector (2) associated with the cathode is formed by a thin porous metal film adherent to the cathode external surface, and a second collector (5) is associated with the anode. The anode collector is pref. on the common centre axis of **container** and cathode. The cathode is pref. formed from a dry particulate mixt. of cpds. with electrocatalytic activity, and electronic conductivity, PTFE fibres of av. 0.5 mm size obtd. by coagulation of a PTFE emulsion and a lubricant.

ABEQ EP 63982 B UPAB: 19930915
An electrochemical generator, especially of the metal/air type, comprising a **housing** and, disposed inside this **housing**: a positive air electrode (1) constituting a cathode

and having a hollow form leaving an inner free space, a first current collector (2) associated to this positive electrode an anodic mass (4) disposed in at least part of said inner free space, and a second current collector (5) associated to this anodic mass, characterised in that said positive electrode is thin and has the shape of a glove finger or a bell essentially symmetric about an axis, the outer and inner diameter of this electrode decreasing from the open end to the closed end whose inner part presents a curved general form, thus leaving an outer free space between said positive electrode (1) and the **housing** (8), and in that said rigid **housing** (8) has at least one opening (9) permitting the access of ambient air into the **housing**, that means into said outer free space and against the outer surface of the positive electrode (1), possibly covered by the first current collector (2).

FS CPI EPI
FA AB
MC CPI: A04-E10; A12-E06; L03-E01B2
EPI: X16-B01A; X16-D
PLC UPA 19930924
KS: 0209 0210 0231 0304 0759 0947 1283 3198 2512 2524 2528 2551 2739 2820

FG: *001* 013 04- 055 056 061 062 063 064 087 141 231 240 252 481 483 501 506 509 52& 60- 623 627 664 665 688

L29 ANSWER 38 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1980-02966C [02] WPIX
TI Gas diffusion electrode for **air-zinc** **battery** etc. - obtd. by pressing porous metal nets onto active carbon and fluorine resin powder-coated porous water repellent **sheet.**
DC A85 L03 X16
PA (MATU) MATSUSHITA ELEC IND CO LTD
CYC 1
PI JP 54041693 B 19791210 (198002)*
PRAI JP 1969-84335 19691020
IC H01M004-88
AB JP 79041693 B UPAB: 19930902
After a water repellent porous **sheet** is coated with a mixt. of active carbon and fluorine resin powder, porous metal nets, each having the desired size of a gas diffusion electrode, are pressed on the coating of the porous **sheet.** The porous **sheet** is then cut to provide four gas diffusion electrodes.

Gas diffusion electrodes with good liq. **leakage** resistance, high mechanical strength and long life are easily mfd. Such electrodes are used for **air-zinc** **batteries**, etc.

Typically 10pts.wt. mixt. of 83pts.wt. active carbon and

17pts.wt. tetrafluoroethylene-hexafluoropropylene copolymer resin powder is mixed with 25 pts.wt. methyl alcohol. The slurry is sprayed on a fluorine resin non-woven cloth **sheet.** After drying the coating, four Ni-plated iron screens are pressed on the coating. The cloth **sheet** is cut so as to separate the iron screens.

FS CPI EPI
FA AB
MC CPI: A04-E10; A12-E06; L03-E01B2
PLC UPA 19930924
KS: 0210 0231 0949 0963 2434 2437 2439 2505 2528 2541 2723 2726 2728 2739 2820

FG: *001* 011 034 04- 062 064 087 089 27& 393 397 431 439 440 443 47& 477 481 483 60- 623 627 664 665

L29 ANSWER 39 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1980-02965C [02] WPIX
TI Gas diffusion electrode mfr. - by coating a porous water-repellent resin member with a slurry of carbon and fluorine resin and pressing with a metal plate.
AW **AIR ZINC BATTERY.**
DC A85 J03 X16
PA (MATU) MATSUSHITA ELEC IND CO LTD
CYC 1
PI JP 54041692 B 19791210 (198002)*
PRAI JP 1969-76070 19690919
IC H01M004-88
AB JP 79041692 B UPAB: 19930902
A mixt. of active carbon and fluorine resin powder is added to solvent which wets the fluorine resin to produce a slurry. The slurry is sprayed or coated onto a porous member of water-repellent resin and dried. A porous metal plate is disposed on the porous member and pressed to give a gas diffusion electrode.

Gas diffusion electrodes with good liq. **leakage** resistance, high mechanical strength and long life are easily mfd. Such electrodes are used for **air-zinc batteries,** etc.

In an example, 10 pts.wt. of a mixt. of 83 pts.wt. active carbon and 17 pts. wt. tetrafluoroethylene-hexafluoropropylene copolymer resin powder is mixed with 25 pts.wt. methyl alcohol. The slurry is sprayed onto a fluorine resin nonwoven **sheet.** After drying, a Ni-plated iron screen is disposed and pressed onto the coating.

FS CPI EPI
FA AB
MC CPI: A04-E10; A11-B05D; A12-E; A12-E06
PLC UPA 19930924

KS: 0210 0231 0949 0963 2434 2437 2439 2505 2528 2541 2571 2653 2680 2723 2726 2728 2739 2820

FG: *001* 011 034 04- 062 064 087 089 27& 393 397 431 439 440 443 47& 477 481 483 532 533 535 540 575 595 60- 623 627 664 665

L29 ANSWER 40 OF 40 WPIX COPYRIGHT 2004 THOMSON DERWENT on STN
AN 1971-63762S [40] WPIX
TI Battery of primary cells through whichelectr.
DC L03 X16
PA (QUA-N) QUALCAST LTD
CYC 1
PI GB 1249308 A (197140)*
PRAI GB 1968-21875 19680508
IC H01M007-02; H01M029-02
AB GB 1249308 A UPAB: 19930831
The flow of electrolyte through the inlet and/or outlet part of the electrolyte **chamber** of each cell is continually interrupted during operation of the battery to prevent or reduce the formation of inter-cell **leakage** current paths through the electrolyte. For example a weir may be associated with each outlet part, and/or a sequentially operable valve arrangement may be associated with the inlet and/or outlet parts. A **magnesium /air** cell **battery** for a lawn mower is described.
FS CPI EPI
FA AB
MC CPI: L03-E02

=> file japio
FILE 'JAPIO' ENTERED AT 15:01:16 ON 03 MAR 2004
COPYRIGHT (C) 2004 Japanese Patent Office (JPO)- JAPIO

FILE LAST UPDATED: 1 MAR 2004 <20040301/UP>
FILE COVERS APR 1973 TO OCTOBER 31, 2003

<<< GRAPHIC IMAGES AVAILABLE >>>

=> d l31 1-25 ibib abs ind

L31 ANSWER 1 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 2003-203614 JAPIO
TITLE: SALES AND STORAGE PACKAGE FOR AIR/ZINC BATTERY
INVENTOR: SCHEIN HERBERT; KRUGER ANJA; HEWELT HELMUT; HAGELE MANFRED; BRADLER MANFRED; STELZIG HEINRICH
PATENT ASSIGNEE(S): VARTA MICROBATTERY GMBH

PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2003203614	A	20030718	Heisei	H01M002-10

APPLICATION INFORMATION
STN FORMAT: JP 2002-365639 20021217
ORIGINAL: JP2002365639 Heisei
PRIORITY APPLN. INFO.: DE 2001-20120503 20011219
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2003

AN 2003-203614 JAPIO
AB PROBLEM TO BE SOLVED: To provide a sales and storage package for **air/zinc batteries** preventing individual **batteries** from being taken out unnoticed before sales, yet easy to be reclosed, and easy to handle in taking out the batteries. SOLUTION: A rotating panel 3 is arranged free to rotate between a support body 1 and a cover 2 bonded or heat sealed with each other, which latter 2 has an opening 7 for the rotating panel 3, and the former has tongue pieces 9 free in closing, through which, individual batteries 5 are to be easily taken out from the rotating panel 3.

IC ICM H01M002-10
ICS B65D075-36

L31 ANSWER 2 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 2003-086256 JAPIO
TITLE: OXYGEN REDUCTION ELECTRODE AND AIR-ZINC CELL
INVENTOR: OHASHI MACHI; KODA HITOSHI
PATENT ASSIGNEE(S): TOSHIBA BATTERY CO LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2003086256	A	20030320	Heisei	H01M012-06

APPLICATION INFORMATION
STN FORMAT: JP 2001-279220 20010914
ORIGINAL: JP2001279220 Heisei
PRIORITY APPLN. INFO.: JP 2001-279220 20010914
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2003

AN 2003-086256 JAPIO
AB PROBLEM TO BE SOLVED: To provide an oxygen reduction electrode, from which high operation voltage is obtained at the time of heavy-load electric discharge.

SOLUTION: It is the oxygen reduction electrode 14 used in an **air-zinc cell** a **fuel cell**, and the like, in which the operation voltage of the heavy load electric discharging is raised by having made the catalyst layer 6, which reduces oxygen, contain a heavy metal salt. As the heavy metal salt, manganese, nickel, cobalt or iron carbonate, or a sulfide or a nitrate, is used. Moreover, the heavy metal salt is made hardly-soluble to the electrolyte by processing the catalyst layer for repellency 8.

IC ICM H01M012-06

L31 ANSWER 3 OF 25 JAPIO (C) 2004 JPO on STN

ACCESSION NUMBER: 2003-045507 JAPIO
TITLE: BUTTON BATTERY
INVENTOR: NAKATSU KENICHI; SOMA NAOKO; YOKOTA HISAKO; OKAMOTO JIRO
PATENT ASSIGNEE(S): MATSUSHITA ELECTRIC IND CO LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2003045507	A	20030214	Heisei	H01M012-06

APPLICATION INFORMATION

STN FORMAT:	JP 2001-230902	20010731
ORIGINAL:	JP2001230902	Heisei

PRIORITY APPLN. INFO.: JP 2001-230902 20010731
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2003

AN 2003-045507 JAPIO

AB PROBLEM TO BE SOLVED: To provide a button battery allowing easy handling of a microminiature **battery**, such as an **air zinc battery** for a heating aid.

SOLUTION: A battery-holding seal 1, provided with a support face 3 extended from one end of a sealing face 2 for sealing an air intake port 12 formed on a positive electrode case 11 of the air zinc battery 10 until it is used, and a knob part 4 formed by extending the other end, is mounted on the **air zinc battery** 10. When the **air zinc battery** 10 is mounted on its mounting position, an adhesive part of the sealing face 2 is separated to make the air zinc battery 10 ready for operation, and the air zinc battery 10 supported by the support face 3 can be moved on the mounting position, while holding the knob part 4.

IC ICM H01M012-06
ICS H01M002-10

L31 ANSWER 4 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 2001-291496 JAPIO
TITLE: BUTTON-SHAPED AIR-ZINC BATTERY
INVENTOR: TSUKAGOSHI ATSUSHI; KIKUMA YUICHI; OHASHI MACHI; KODA HITOSHI
PATENT ASSIGNEE(S): TOSHIBA BATTERY CO LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2001291496	A	20011019	Heisei	H01M002-02

APPLICATION INFORMATION
STN FORMAT: JP 2000-104870 20000406
ORIGINAL: JP2000104870 Heisei
PRIORITY APPLN. INFO.: JP 2000-104870 20000406
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001

AN 2001-291496 JAPIO
AB PROBLEM TO BE SOLVED: To improve a reliability of a button-shaped air-zinc battery accommodating the trend to have a high capacity. SOLUTION: In the button-shaped **air-zinc battery**, an **air** diffusion layer: a water repellent layer, a positive catalytic layer, and a separator are laminated successively; a negative receptacle filled with a gel-zinc negative electrode is placed through the separator; and an opening of the positive can is bended inward through an insulating gasket and sealed. By reducing the diameter of the sidewall of the positive can portion where the positive catalytic layer has been arranged, a contact between an inner wall of the positive can and the positive catalytic layer is stabilized, and a sporadic increase of an internal resistance is prevented. As the result, a reliability of the battery can be improved, and a stable discharge characteristic can be obtained. The part to reduce the diameter can be (A), which is from the bottom of the positive can to the portion where the separator is placed, and the extent (D-C) to which the diameter is reduced is, for example, from 0.005 to 0.2 mm.

IC ICM H01M002-02
ICS H01M012-06

L31 ANSWER 5 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 2000-011968 JAPIO
TITLE: BUTTON TYPE ALKALINE BATTERY
INVENTOR: OKAMOTO JIRO; SOMA NAOKO
PATENT ASSIGNEE(S): MATSUSHITA ELECTRIC IND CO LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 2000011968	A	20000114	Heisei	H01M002-04

APPLICATION INFORMATION
STN FORMAT: JP 1998-176231 19980623
ORIGINAL: JP10176231 Heisei
PRIORITY APPLN. INFO.: JP 1998-176231 19980623
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2000

AN 2000-011968 JAPIO
AB PROBLEM TO BE SOLVED: To provide a button type alkaline **battery** a button type **air zinc** **battery** especially, with high capacity and superior liquid leakage resistance.
SOLUTION: In a button type alkaline battery using zinc as a negative electrode active material and alkaline aqueous solution as an electrolyte, a part or the whole of different kinds of metals 10b, 10c on an opening part cut face of a negative electrode case, in which the inside face is made of a copper layer 10a and no folded part is formed, is coated with the copper layer 10a. In this case, the opening end part of the negative electrode case is desirably bent outward.
COPYRIGHT: (C)2000,JPO
IC ICM H01M002-04

L31 ANSWER 6 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 1999-032631 JAPIO
TITLE: REEL FOR FISHING
INVENTOR: HIRAHARA TOSHIYUKI
PATENT ASSIGNEE(S): RYOBI LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 11032631	A	19990209	Heisei	A01K089-015

APPLICATION INFORMATION
STN FORMAT: JP 1997-205178 19970715
ORIGINAL: JP09205178 Heisei
PRIORITY APPLN. INFO.: JP 1997-205178 19970715
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1999

AN 1999-032631 JAPIO
AB PROBLEM TO BE SOLVED: To provide a low-cost reel for fishing, making exchange operation of restoring force unnecessary, having high airtightness and extremely slight in trouble of electronic equipment

and having high reliability.
SOLUTION: A control case 4 is fixed to a reel body 1. A central processing unit 42, a liquid crystal display instrument 43 and an air zinc battery 44 are housed in the control case 4. In the **air zinc battery** 44, the **battery** life is longer than the product life of the reel body 1. Therefore, the control case 4 is formed in an unopenable structure by which the consideration of the battery exchange is not reguired. In addition, the control case 4 is formed in fluid-tight structure capable of ventilating so as to be able to take oxygen necessary to generate electromotive power of internal air zinc battery 44 therein.

IC ICM A01K089-015
ICA H01M012-06

L31 ANSWER 7 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 1998-162870 JAPIO
TITLE: ELECTROCHEMICAL ZINC-AIR MULTIPLE CELL BATTERY
INVENTOR: SERGEI KINBERG
PATENT ASSIGNEE(S): ELECTRIC FUEL EFL LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 10162870	A	19980619	Heisei	H01M012-08

APPLICATION INFORMATION
STN FORMAT: JP 1996-313950 19961125
ORIGINAL: JP08313950 Heisei
PRIORITY APPLN. INFO.: JP 1996-313950 19961125
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1998
AN 1998-162870 JAPIO
AB PROBLEM TO BE SOLVED: To take out a large quantity of heat, and enhance reliability by arranging a means which has a pair of separate thin plates and adjusts the flow of the cooling air between adjacent battery cells whose main surfaces are oppositely arranged in parallel to each other, and cooling the reaction air contacting the outside surface by flowing the cooling air inside it.
SOLUTION: An air electrode is arranged in a cell housing by sandwiching a porous particle zinc electrode, and electrolyte is filled, and a battery cell is constituted. These battery cells 26 are arranged in large numbers in parallel to each other, and are housed in a **battery** case 22, and a **zinc-air** multiple cell **battery** 10 is obtained. A means 12 which is composed of a pair of separate thin plates and adjusts the flow of the cooling air, is arranged along the whole area of a main surface between the adjacent battery cells 26. These thin

plates are preferably plastic or copper or the like. The reaction air is supplied between the outside of these thin plates and the air electrode through a gas washer, and the cooling air is made to flow to an air passage between the thin plates through a manifold duct 14, and the reaction air is cooled.
COPYRIGHT: (C)1998,JPO
IC ICM H01M012-08
ICS H01M010-50

L31 ANSWER 8 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 1998-064603 JAPIO
TITLE: ZINC AIR BATTERY
INVENTOR: MORITA KORENOBU; NAKATSU KENICHI; OKAMOTO JIRO; AKIYAMA TAKASHI
PATENT ASSIGNEE(S): MATSUSHITA ELECTRIC IND CO LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 10064603	A	19980306	Heisei	H01M012-06

APPLICATION INFORMATION
STN FORMAT: JP 1996-222128 19960823
ORIGINAL: JP08222128 Heisei
PRIORITY APPLN. INFO.: JP 1996-222128 19960823
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1998
AN 1998-064603 JAPIO
AB PROBLEM TO BE SOLVED: To provide a zinc air battery which is dischargeable with a current of no less than 15mA/cm<SP>2</SP> per unit electrode area and whose deterioration in the electric capacity after 30 days at 25°C and 60% RH is below 10%.
SOLUTION: This **zinc air battery** contains **zinc** 11 as negative electrode active material and uses oxygen in the air as positive electrode active material, and the positive electrode is provided with an air electrode for oxygen reduction, wherein the max. discharge current per unit area of air electrode 4 is no less than 15mA/cm<SP>2</SP>. A fine porous film 7 having chiefly small holes of diameters under 596Å is used to a gas dispersion layer 5 arranged on the gas dispersion surface of the air electrode 4, and thus the zinc air battery of button form is constituted.
COPYRIGHT: (C)1998,JPO
IC ICM H01M012-06

L31 ANSWER 9 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 1997-219219 JAPIO
TITLE: MANUFACTURE OF LITHIUM SECONDARY BATTERY

INVENTOR: OKI NAOHIKO; SATO KENJI; KOMAZAWA EISUKE; DEMACHI ATSUSHI
PATENT ASSIGNEE(S): HONDA MOTOR CO LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 09219219	A	19970819	Heisei	H01M010-40

APPLICATION INFORMATION
STN FORMAT: JP 1996-44051 19960207
ORIGINAL: JP08044051 Heisei
PRIORITY APPLN. INFO.: JP 1996-44051 19960207
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1997

AN 1997-219219 JAPIO
AB PROBLEM TO BE SOLVED: To assemble a lithium secondary battery in a well-workable manner by assembling a negative electrode formed of Li-carried carbon based material stable in the air and a positive electrode formed of positive electrode active material not containing Li in the air.
SOLUTION: A positive electrode formed of positive electrode active material not containing Li related to charge and discharge and a negative electrode formed of Li-carried carbon based material stable in the air in a Li-carried state are used to assemble a battery cell in the air. The positive electrode active material is formed by firing V<SB>2</SB>O<SB>5</SB>, CoCO<SB>3</SB>, etc., at 100-500°C. The carbon based material is formed by firing organic polymeric compound such as polyphenine, poly(p-phenylene vinylene), poly(p-phenylene xylene), etc. By using the positive electrode and the negative electrode to assemble the **battery** cell in the **air**, a **lithium** secondary **battery** is provided in a well-workable manner without requiring large facilities including an inactive atmosphere.
COPYRIGHT: (C)1997,JPO
IC ICM H01M010-40
ICS H01M004-02; H01M004-04

L31 ANSWER 10 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 1996-106895 JAPIO
TITLE: PACKED BATTERY
INVENTOR: SAWAI TADASHI; NAKAYAMA RYOICHI; HATASAKI YASUZO
PATENT ASSIGNEE(S): MATSUSHITA ELECTRIC IND CO LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 08106895	A	19960423	Heisei	H01M002-34

APPLICATION INFORMATION
STN FORMAT: JP 1994-241240 19941005
ORIGINAL: JP06241240 Heisei
PRIORITY APPLN. INFO.: JP 1994-241240 19941005
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1996

AN 1996-106895 JAPIO
AB PURPOSE: To provide, as a portable telephone power source, a primary battery- used packed battery which has compatibility with a secondary battery-used packed battery, having a change preventing diode connected to an internal electronic circuit, and having a plurality of air holes on a resin case.
CONSTITUTION: In a packed battery for portable telephone power source, air permeable porous water repelling film 3 never passing water is provided inside a plurality of air holes provided on the side surface of a facing resin case 1. The case 1 is vertically opened and closed, an **air-zinc** type **battery** (AA **battery**) 4 is replaced as occasion demands, a large capacity can be attained with light weight. Since a diode 7 is set between the external terminal 5 and internal terminal 6 on the positive electrode side, the packed battery in which a primary battery is installed is never charged when set to a battery charger. As a double countermeasure to charge prevention, a thermosensitive element or thermal fuse 8 may be connected in series to the diode. The appearance color tone of the packed battery 4 is set to yellow, orange, green or white which is opposite colors to the black or gray of the secondary battery pack.
COPYRIGHT: (C)1996,JPO
IC ICM H01M002-34
ICS H01M002-10

L31 ANSWER 11 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 1995-143607 JAPIO
TITLE: POWER SUPPLY FOR ELECTRIC MOTOR VEHICLE
INVENTOR: KOBAYASHI KAZUO
PATENT ASSIGNEE(S): BROTHER IND LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 07143607	A	19950602	Heisei	B60L011-18

APPLICATION INFORMATION
STN FORMAT: JP 1993-282370 19931111
ORIGINAL: JP05282370 Heisei
PRIORITY APPLN. INFO.: JP 1993-282370 19931111
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined

Applications, Vol. 1995

AN 1995-143607 JAPIO

AB PURPOSE: To reduce the weight of a power source and to increase a capacity or a maximum output by switching the power supply to an air-zinc battery at the time of a low load and to a lead battery or the lead **battery** and the **air-zinc** **battery** at the time of a high load.
CONSTITUTION: A controller 7 has a comparator, a reference voltage 1 output circuit, and a reference voltage 2 output circuit, and detects the load of a driver 23 having a DC motor 11. More particularly, the voltage between A and B is detected, and compared with a reference voltage 1 or 2. When the detected voltage is lower than the voltage 1, a relay switch 5 is closed, while when the detected voltage is higher than the voltage 2, the switch 5 is opened. That is, a power supply 30 for an electric motor vehicle distinctly uses an air-zinc battery 1 having a large capacity per unit weight and a lead storage battery 3 which can output a large current by using the controller 7 for detecting a load to switch the power supply, thereby reducing the weight of the power source and increasing a capacity and a maximum output.

IC ICM B60L011-18
ICS H01M010-44; H01M016-00; H02J007-00

L31 ANSWER 12 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 1994-256008 JAPIO
TITLE: FLUORINATED CARBON PARTICLE AND ITS PRODUCTION AND USE
INVENTOR: YAMANA MASAYUKI; KITAHARA TAKAHIRO; ISOGAI TOSHIHIRO
PATENT ASSIGNEE(S): DAIKIN IND LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 06256008	A	19940913	Heisei	C01B031-00

APPLICATION INFORMATION
STN FORMAT: JP 1993-8188 19930121
ORIGINAL: JP05008188 Heisei
PRIORITY APPLN. INFO.: JP 1992-297450 19921106
PRIORITY APPLN. INFO.: JP 1992-347165 19921225
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1994

AN 1994-256008 JAPIO

AB PURPOSE: To provide fluorinated carbon particles having excellent dispersibility and powder fluidity.
CONSTITUTION: Fluorinated carbon particles comprise >=50% based on

the whole particles of particles having 0.01-50μm number-average particle diameter and particle diameters with a particle size distribution within ±20% the number- average particle diameter and have 1.7-2.5 true specific gravity, 0.001-0.5 F/C of the whole particles and F/C of the surface of the above-mentioned particles which are always larger than F/C of the whole particles and are 0.1-2.0. The fluorinated carbon particles are obtained by reacting carbon particles with fluorine at 350-600°C for 1 minute to 6 hours. The fluorinated carbon particles are useful as a single material or a composite material for water repellent.oil repellent, nontackifier, solid lubricant, electrical conductivity imparter, additive for toner for electrostatic image development, additive for coating film layer made of resin for carrier for electrostatic image development, composite material for sealing roller, phosphoric acid type **fuel cell**, **air/zinc** cell, nickel/ hydrogen storage **battery**.

IC ICM C01B031-00
ICS B01J002-00; C07C019-08; C09C001-00; C09C001-56; C09D005-00; C09D005-00; C09D005-00; C09D005-24; G03G009-08; G03G009-113; G03G015-20; G03G015-20
ICA C08K003-04

L31 ANSWER 13 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 1994-196199 JAPIO
TITLE: SECONDARY BATTERY
INVENTOR: KAWAKAMI SOICHIRO; MISHINA SHINYA; KOBAYASHI NAOYA
PATENT ASSIGNEE(S): CANON INC
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 06196199	A	19940715	Heisei	H01M010-04

APPLICATION INFORMATION
STN FORMAT: JP 1992-344563 19921224
ORIGINAL: JP04344563 Heisei
PRIORITY APPLN. INFO.: JP 1992-344563 19921224
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1994

AN 1994-196199 JAPIO
AB PURPOSE: To provide long cycle service life secondary batteries which have negative electrode active material formed of lithium or zinc such as a lithium secondary battery, a nickel zinc secondary **battery**, an **air zinc** secondary **battery**, a bromine zinc secondary battery or the like.

CONSTITUTION: In a secondary battery formed at least of a negative electrode 101, a separator 106, a positive electrode 102, electrolyte 104, a negative electrode current collecting body 100 and a battery case 109, a multilayer metallic oxide film 105 where at least a bimolecular film is formed in a casting mold, is arranged between the positive electrode and the negative electrode. Thereby, even if dendrite of lithium or zinc grows at charging time, since a short circuit of the negative electrode and the positive electrode can be restrained, a lithium secondary battery, a nickel zinc secondary **battery**, an **air zinc** secondary **battery**, a bromine zinc secondary battery and the like having the long charge and discharge cycle service life can be manufactured. Since metallic lithium can be used as a negative electrode active material, the secondary battery having high energy density can be manufactured.

IC ICM H01M010-04
ICS H01M010-28; H01M010-40

L31 ANSWER 14 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 1994-078465 JAPIO
TITLE: COMBINATION BATTERY
INVENTOR: TAKAYAMA TOMIO
PATENT ASSIGNEE(S): FUJITSU LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 06078465	A	19940318	Heisei	H02J007-00

APPLICATION INFORMATION
STN FORMAT: JP 1991-93951 19910424
ORIGINAL: JP03093951 Heisei
PRIORITY APPLN. INFO.: JP 1991-93951 19910424
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1994

AN 1994-078465 JAPIO
AB PURPOSE: To make it possible to lighten a battery in weight and to use it for a long time by combining a primary battery of a large energy density with a secondary battery of a small energy density to make them a combination battery.
CONSTITUTION: For a primary **battery** (e.g. a **zinc /air battery**) 2, a **battery** having a larger energy density than a secondary battery (e.g. a nickel/cadmium battery) 3 is used. The secondary battery 3 is charged from this primary battery 2 and supplies a power source to a load 6. During the supply of the power source to the load 6 from the secondary battery 3, a current limiting means 4 limits a charging

cirrent from the primary battery 2 to the secondary battery 3. According to this constitution, a combination battery 1 thus constructed can be lightened in weight and used for a long time.
COPYRIGHT: (C)1994,JPO&Japio
IC ICM H02J007-00
ICS H01M010-44

L31 ANSWER 15 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 1993-166501 JAPIO
TITLE: WATERPROOF CONTAINER FOR COIN TYPE BATTERY
INVENTOR: SEI JUNICHIRO; KAWABATA KATSUMASA
PATENT ASSIGNEE(S): MATSUSHITA ELECTRIC IND CO LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 05166501	A	19930702	Heisei	H01M002-10

APPLICATION INFORMATION
STN FORMAT: JP 1991-331664 19911216
ORIGINAL: JP03331664 Heisei
PRIORITY APPLN. INFO.: JP 1991-331664 19911216
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1993

AN 1993-166501 JAPIO
AB PURPOSE: To provide a waterproof container for a coin type battery which makes a battery lid small, relieves the strength of the battery lid and the like, widens the range of battery lid open-close mechanism and design, and makes the air flow through the **battery** lid so that a **air zinc battery** can be used.
CONSTITUTION: A waterproof packing 15 made of rubber is mounted on the periphery of a coin type battery 1. The coin type battery 1 is forced into a containing recess 11 under a condition that the waterproof packing 15 is mounted. The sealing portion 18 of the waterproof packing 15 is sandwiched between the inside peripheral wall of the containing recess 11 and the battery in a compressed condition so as to seal, as the battery is forced thereinto. Thereby the battery lid 13 is not used as a seal.
COPYRIGHT: (C)1993,JPO&Japio
IC ICM H01M002-10

L31 ANSWER 16 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 1992-188576 JAPIO
TITLE: STRUCTURE OF **AIR** ELECTRODE OF **METAL-AIR BATTERY**
INVENTOR: YAMAGISHI TOSHIHIKO; UIRIAMU MARITSUTO
PATENT ASSIGNEE(S): SEIKO EPSON CORP

PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 04188576	A	19920707	Heisei	H01M012-06

APPLICATION INFORMATION
STN FORMAT: JP 1990-315389 19901120
ORIGINAL: JP02315389 Heisei
PRIORITY APPLN. INFO.: JP 1990-315389 19901120
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1992

AN 1992-188576 JAPIO
AB PURPOSE: To heighten the current density per unitary area and enhance accord ingly the output density by using Goatex as a water repelling layer.
CONSTITUTION: Pt is borne by carbon powder, which is mixed with fluoric resin in a ball mill, and the result is heated, compressed, and turned into a sheet as a catalyst layer. This sheet of catalyst layer 4 is attached by pressure to Ni mesh 3, and an adhesive is applied to that surface of Ni mesh which is free from catalyst layer attachment in the form of a line or dots, and thereto a Goatex sheet 2 is attached. Because of very large void share, the Goatex presents a good air penetrativeness, and supply of the air with high oxygen concentration to the catalyst layer and diffusion of the air with sunken partial pressure of oxygen take place quickly. This increases the efficiency of air electrode per unitary area and heightens the current density.

IC ICM H01M012-06

L31 ANSWER 17 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 1984-217967 JAPIO
TITLE: ZINC AIR BATTERY
INVENTOR: YAMANOBE TERUJI; INADA KUNIAKI; WATABE MICHIO; SATO HITOMI
PATENT ASSIGNEE(S): TOSHIBA BATTERY CO LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 59217967	A	19841208	Showa	H01M012-06

APPLICATION INFORMATION
STN FORMAT: JP 1983-92092 19830525
ORIGINAL: JP58092092 Showa
PRIORITY APPLN. INFO.: JP 1983-92092 19830525
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined

Applications, Vol. 1984

AN 1984-217967 JAPIO

AB PURPOSE: To prevent crack generation of a porous sheet and increase leakage resistant performance by forming a concavo-convex part in the inside bottom of a button type zinc air battery and placing a porous sheet thereon and stacking an air electrode, a liquid absorbing material, and a gelled zinc anode in order.
CONSTITUTION: Air holes 2 and a concavo-convex part 3 are formed in the bottom of a metal cathode can 1 which also serves as a cathode terminal, and a porous sheet 4 having good water repellent capability and gas permeability is placed thereon, then an air electrode 5 and a liquid absorbent material 6 are stacked in order. A gelled zinc anode 7 is filled in a metal cap 8 which also serves as an anode terminal and the cap 8 is placed into the cathode can 1 through an insulating gasket 9, then the cathode can 1 is sealed to form a button type **zinc air battery.**
Gelled **zinc** anode is increased by removing a diffusion paper, and crack generation of the porous sheet 4 caused by volume expansion of the gelled zinc is prevented by the concavo-convex part 3. Therefore, discharge capacity and leakage resistant performance are improved.

IC ICM H01M012-06

L31 ANSWER 18 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 1984-025164 JAPIO
TITLE: SEPARATOR FOR ALKALINE BATTERY
INVENTOR: YAMASHITA HIROYUKI
PATENT ASSIGNEE(S): KANAI HIROYUKI
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 59025164	A	19840209	Showa	H01M002-16

APPLICATION INFORMATION
STN FORMAT: JP 1982-134261 19820730
ORIGINAL: JP57134261 Showa
PRIORITY APPLN. INFO.: JP 1982-134261 19820730
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1984

AN 1984-025164 JAPIO

AB PURPOSE: To obtain a separator for alkaline battery in which the fiber is increased in its density, arranged in the mutually entangled status, provided with resistance to electrolyte and high working efficiency without any short-circuit by thermally contracting the web consisting of alkaline treated cotton and thermally contractive fibers.

CONSTITUTION: A web is formed by web former such as a card machine or land machine from a mixed fiber consisting of the cotton fiber of 70∼50% which is previously processed through the alkaline liquid bath treatment and the thermally contractive synthetic fiber of 30∼50%. Moreover, the web fibers are mutually entangled a little and temporarily fixed as required by the needle punch machine. The web is submerged into the hot water bath of 100°C for two minutes. The web contracted thereby is subjected to dehydration and desiccation. Thereby, a separator to be used for an alkaline battery such as alkaline-manganese **battery**, nickel-cadmium **battery**, **air-zinc**-lead **battery** and silver **battery** etc. can be obtained.
COPYRIGHT: (C)1984,JPO&Japio

IC ICM H01M002-16

L31 ANSWER 19 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 1984-000277 JAPIO
TITLE: PORTABLE VIDEO CAMERA
INVENTOR: MATSUTANI TAKESHI
PATENT ASSIGNEE(S): TOSHIBA BATTERY CO LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 59000277	A	19840105	Showa	H04N005-26

APPLICATION INFORMATION
STN FORMAT: JP 1982-107294 19820622
ORIGINAL: JP57107294 Showa
PRIORITY APPLN. INFO.: JP 1982-107294 19820622
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1984

AN 1984-000277 JAPIO
AB PURPOSE: To make a titled camera execute a constant photographing operation without requiring a charging operation, and also to make it easily portable, by forming it so that a primary battery power supply pack is loaded to a camera body, in the lower part from the center of a portable video camera body.
CONSTITUTION: An installing part 5 of an electric power supply pack 6 of a primary battery 8 is loaded to a lower part 7 from the center of a video camera body 1. The primary battery 8 consists of, for instance, a cylindrical **lithium battery**, an **air battery**, an alkali manganese **battery**, etc., and is formed to high voltage and high capacity by connecting suitable pieces in series or series- parallel in conformity with power consumption and voltage, etc. A positive pole terminal 10 and a negative pole terminal 11 are formed so as to be exposed to a part of the electric power supply pack 6, and it is

loaded normally to the installing part 5 of the lower part 7 of the camera body 1 by a guide 12 provided on both sides of the electric power supply pack 6, by which photograhing can be executed.
COPYRIGHT: (C)1984,JPO&Japio
IC ICM H04N005-26

L31 ANSWER 20 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 1983-206048 JAPIO
TITLE: ALKALINE BATTERY
INVENTOR: FUJI KENJI; OKUZAKI YOSHIO; SAWAI TADASHI; MOMOSE KEIGO
PATENT ASSIGNEE(S): MATSUSHITA ELECTRIC IND CO LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 58206048	A	19831201	Showa	H01M004-06

APPLICATION INFORMATION
STN FORMAT: JP 1982-89137 19820526
ORIGINAL: JP57089137 Showa
PRIORITY APPLN. INFO.: JP 1982-89137 19820526
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1983
AN 1983-206048 JAPIO
AB PURPOSE: To enhance the discharge performance and preservability in the captioned alkaline battery such as an alkaline manganese **battery**, mercury **battery**, **air-zinc battery** of the like for which alkali electrolytic solution is used.
CONSTITUTION: This alkaline battery is provided with a positive electrode, an alkali electrolytic solution and a gel-like zinc negative electrode; and the combination mixture of crosslinked, branched-type polyacrylic acid or its salts and straight chain-type polyacrylic acid or its salts is used as a gelling agent which constitutes the gel-like zinc negative electrode. by means of a battery preservation characteristic test and a closed circuit voltage characteristic test, the total addition amount to the alkali electrolytic solution is desired to be 3∼6wt%; and optimum mixture range of straight chain-type polyacrylate sodium salts is 10∼50wt% based on the total gelling agent.
COPYRIGHT: (C)1983,JPO&Japio
IC ICM H01M004-06
ICS H01M006-22

L31 ANSWER 21 OF 25 JAPIO (C) 2004 EPO on STN
ACCESSION NUMBER: 1983-026465 JAPIO
TITLE: **BATTERY**, PARTICULARLY **METAL-**

AIR BATTERY

INVENTOR: JIYAN RUUFU; DETOREFU KATORINIOKU; FUUGO PATSUKU
PATENT ASSIGNEE(S): AKUMURATOORENBUERUKU HOTSUPETSUKE KAARU TSUERUNERU UNTO ZOON
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 58026465	A	19830216	Showa	H01M012-06

APPLICATION INFORMATION
STN FORMAT: JP 1982-119977 19820712
ORIGINAL: JP57119977 Showa
PRIORITY APPLN. INFO.: DE 1981-3129248 19810724
SOURCE: INPADOC
AN 1983-026465 JAPIO
IC ICM H01M012-06
ICS H01M002-38

L31 ANSWER 22 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 1982-111958 JAPIO
TITLE: AIR ELECTRODE
INVENTOR: SUZUKI NOBUKAZU
PATENT ASSIGNEE(S): TOSHIBA CORP
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 57111958	A	19820712	Showa	H01M004-86

APPLICATION INFORMATION
STN FORMAT: JP 1980-185128 19801227
ORIGINAL: JP55185128 Showa
PRIORITY APPLN. INFO.: JP 1980-185128 19801227
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1982
AN 1982-111958 JAPIO
AB PURPOSE: To enhance the heavy-load discharge characteristic of an air electrode by preparing an oxygen-gas permselective film containing a perfluoro compound or the like having a great oxygen-absorbing ability, and making the above film to be in contact with an electrode body.
CONSTITUTION: A resin which forms an oxygen-gas permselective film, such as polysiloxane, is dissolved into an organic solvent to prepare a solution. Thus prepared solution is added with at least one compound of a perfluoro compound such as perfluoro decalin which has a selective oxygen-adsorbing ability, a metal phthalocyanine such as cobalt phthalocyanine, and a metal porphyrin such as cobalt

porphyrin so as to make a solution. An oxygen-gas permselective film is formed by spreading thus made solution before the solvent is evaporated. Then, it is pressed and attached upon an electrode body which is prepared from a porous active metal, such as a silver filter, thus an air electrode is obtained. When thus obtained air electrode is used for a hydrogen/oxygen **fuel cell** , a **metal/air battery** or the like, the heavy-load discharge of the battery is enhanced, and the liquid leakage resistance of the battery is increased.

IC ICM H01M004-86

L31 ANSWER 23 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 1982-111957 JAPIO
TITLE: AIR ELECTRODE
INVENTOR: SUZUKI NOBUKAZU
PATENT ASSIGNEE(S): TOSHIBA CORP
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 57111957	A	19820712	Showa	H01M004-86

APPLICATION INFORMATION
STN FORMAT: JP 1980-185127 19801227
ORIGINAL: JP55185127 Showa
PRIORITY APPLN. INFO.: JP 1980-185127 19801227
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1982

AN 1982-111957 JAPIO
AB PURPOSE: To prevent any liquid leakage of a battery which is prepared by using an air electrode, and enable heavy-load discharge of the battery by preparing the air electrode by making an oxygen-gas permselective film to be in contact with an air electrode body, with a water repellent layer of a given thickness interposed between the electrode body and the oxygen-gas permselective film. CONSTITUTION: A water repellent layer, which has a thickness of 0.1∼1μm and is made of fluoroethylene propylene (copolymer) or the like having electrolyte resisting and water repellent property, is formed on a surface of an oxygen-gas permselective film such as polysiloxane by a sputtering or a vapor deposition method. The oxygen-gas permselective film is pressed upon and is made in contact with an electrode body made of a porous active metal such as a silver filter, with the water repellent layer interposed between the electrode body and the oxygen-gas permselective film. After that, they are made to adhere to each other by thermal fusion or the like, thus an air electrode is prepared. Thus prepared air electrode is used for a hydrogen/oxygen **fuel cell**, a

metal/air battery or the like.
COPYRIGHT: (C)1982,JPO&Japio
IC ICM H01M004-86

L31 ANSWER 24 OF 25 JAPIO (C) 2004 JPO on STN
ACCESSION NUMBER: 1981-048077 JAPIO
TITLE: ZINC-AIR BATTERY
INVENTOR: FUJITA MASARU; MAKI YOSHIYUKI
PATENT ASSIGNEE(S): SHIN KOBE ELECTRIC MACH CO LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 56048077	A	19810501	Showa	H01M012-06

APPLICATION INFORMATION
STN FORMAT: JP 1979-122767 19790925
ORIGINAL: JP54122767 Showa
PRIORITY APPLN. INFO.: JP 1979-122767 19790925
SOURCE: PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1981
AN 1981-048077 JAPIO
AB PURPOSE: To provide long life of a battery as well as to prevent creeping phenomena by enclosing an air hole made on the **battery** vessel of a **zinc-air battery** with use of a water-repellent membrane.
CONSTITUTION: Zinc powder 2 is filled into a cap 1 which is partly used as a cathode terminal. An air electrode 8 in which catalysts such as platinum black are added into carbon powder is inserted through an electrolytic impregnant 5, a separator 6 into a core material 7 made of nickel or stainless steel net or the like at the inner bottom part of a vessel 3 in which an air hole 4 to lead to the outside at the bottom part. Besides, a liquid absorbent 10 to absorb water-repellent fluororesin membrane 9 and creeping electrolyte is provided in the vessel 3, and this vessel 3 is enclosed through a packing 11 by the cap 1 to form a flat-chaped zinc-air battery. In this case, the air hole 4 of the vessle 3 is enclosed by being bonded or welded with use of air-premeable and water-repellent high molecular material, for example a thin fluororesin membrane 12.
COPYRIGHT: (C)1981,JPO&Japio
IC ICM H01M012-06

L31 ANSWER 25 OF 25 JAPIO (C) 2004 EPO on STN
ACCESSION NUMBER: 1977-048028 JAPIO
TITLE: DEVICE FOR SUPPLYING AND CONTROLLING **AIR** TO **ZINC AIR BATTERY**
INVENTOR: NONOYAMA SEIJI

PATENT ASSIGNEE(S): TOYOTA MOTOR CO LTD
PATENT INFORMATION:

PATENT NO	KIND	DATE	ERA	MAIN IPC
JP 52048028	A	19770416	Showa	H01M012-08

APPLICATION INFORMATION
STN FORMAT: JP 1975-122915 19751014
ORIGINAL: JP50122915 Showa
PRIORITY APPLN. INFO.: JP 1975-122915 19751014
SOURCE: INPADOC
AN 1977-048028 JAPIO
IC ICM H01M012-08
ICS B60L011-18

=>